STORAGE

VOL. II. TORONTO, JUNE, 1921 No. 2

R. A. Mc Culloch

THE
CANADIAN VETERINARY RECORD

PROGRESS

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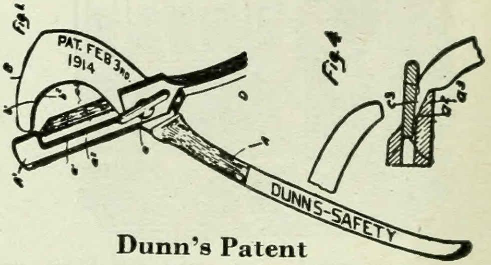

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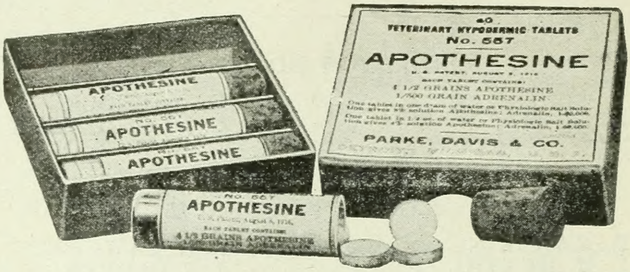

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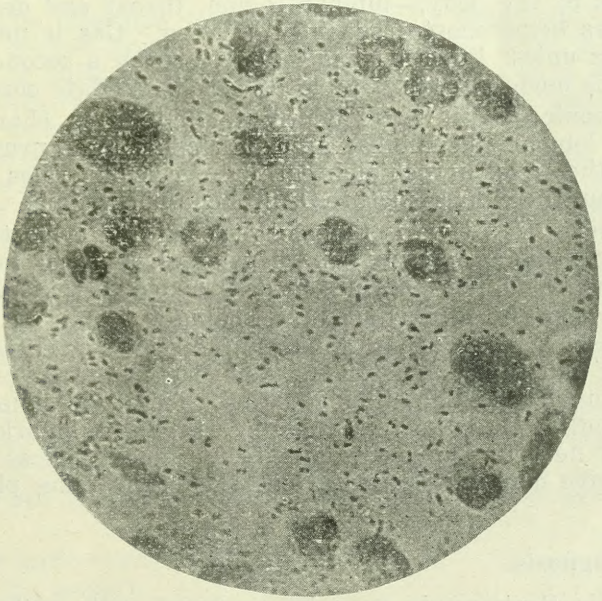
Bovine Hemorrhagic Septicaemia

By Chas. A. Mitchell, Biological Laboratory, Ottawa.

This disease occurs in Canada sporadically and enzootically but never as a wide spread outbreak. It does not appear to be confined to any fixed section but is scattered throughout the whole Dominion. It occurs, however, I believe, more frequently than is usually thought, and is often diagnosed as other infections.



Microphotograph showing the **B. bipolaris septicus.** Smears made from the peritoneal exudate of guinea pig infected with Hemorrhagic Septicaemia.

Clinical forms.

The infection shows itself in four well marked clinical types. These types occur singly or as is sometimes the case, two types will run a concurrent course in the one animal. The types may be defined as follows:

1. Subcutaneous.
2. Pneumonic.
3. Enteric.
4. Septicaemic.

General clinical symptoms.

The onset of the disease is rapid. An elevation of body temperature is generally found although the disease in some instances may run its course and cause the death of an animal without the temperature rising above 103° F. Pulse is accelerated and respirations increased. It is frequently noticed that the respirations are spasmodic and labored for a period of time during the course of the disease. A period of relief will follow, and again the spasm return. There is of course a cessation of appetite, rumination and milk secretion. Peristalsis is at first retarded and after a short time is followed by active peristalsis and diahorrea. When the disease has progressed a few hours the visible superficial circulation becomes engorged; this may be noted by examination of the conjuctiva, or nasal mucous membrane. Because of the engorgement and consequent rupture of small vessels, blood is frequently found trickling from the nose. Owing to the engorged condition of the circulation the tongue becomes swollen and the throat smaller in size. Deglutition is, therefore, very difficult and the expired air makes a peculiar gurgling sound.

Clinical symptoms peculiar to different types.

I. **Subcutaneous.** In this type oedematous swelling may be found in different parts of the body,—lumbar region, throat and dewlap are one of the quarters being most frequently affected. Gas is never found in these swellings unless infection has taken place by a secondary invader. If an incision is made into them a bloody serous exudate oozes out.

II. **Pneumonic.** This is frequently found and is characterized by symptoms of lobular pneumonia, arched back, cough, prune juice discharge from the nose, bronchial breathing, vesicular rales and all that goes to make up the clinical picture of broncho-pneumonia.

III. **Enteric.** This type is the most typical and easiest to diagnose. Peristalsis is generally increased, and depending upon the location of the extravasation of blood, the feces will be dark or blood stained.

IV. **Septicaemic form.** This form should possibly be called toxic form. Great care is necessary in this form to arrive at a correct diagnosis. It is necessary that the diagnostician take every advantage of history and clinical symptoms to exclude other illnesses. This type almost invariably progresses rapidly. Muscular tremors are generally well marked, and there are frequently nervous symptoms manifested, such as loss of muscular control, agressive mania, or coma. Death generally takes place in a few hours.

Differential diagnosis.

Hemorrhagic Septicaemia may be confused with **anthrax, blackleg vibrion septique infections, botulism** and in some foreign countries rinderpest and contagious pleuro-pneumonia.

Anthrax. Where any doubt exists hemorrhagic septicaemia should only be differentiated from anthrax by bacteriological diagnosis.

Blackleg. There is generally a certain amount of gas found in the tissues in blackleg infections and the intense congestion of the superficial circulation in parts other than the affected region, such as the conjunctiva etc., is absent.

Vibrion septique infections.

These infections are characterized by the formation of a plentiful amount of gas in the areolar tissue which produces a crackling sound when the hand is passed over it.

Botulism or forage poisoning which resembles somewhat the septicaemic form in cattle is more generally of a chronic nature. There is frequently a history of improper food.

Rinderpest and contagious pleuro-pneumonia do not need to be considered as they do not occur in Canada.

Etiology. The cause of Bovine Hemorrhagic Septicaemia is the **B. bipolar septicus.** This organism is a saprophyte and is found in the respiratory tract of normal animals. Under certain conditions it becomes virulent and the infection appears then to be easily passed from animal to animal. The period of incubation is almost unbelievably short. We have absolute field evidence from records gathered by this laboratory, that the natural period of incubation is in some instances no more than twelve hours. Fortunately, however, its virulence does not last long and outbreaks tend to die out after a few animals have become infected. This doubtless accounts for the rather localized outbreaks.

Bad hygiene, youth, debility, and refrigeration of the surface of the body, are contributory causes.

The organism and its characteristics.

The Bacillus bipolaris septicus is an ovoid organism, 1-2 micra long and .1 to .5 micron broad. It does not stain by Gram's method. It is non-motile. In cultures it varies greatly in size, and is extremely pleomorphic. Taken from the tissues it has a tendency to bipolar staining but when grown on laboratory media for some time it loses to a large extent this characteristic. It stains readily with all aniline dyes. I have found dilute Giemsa or very dilute carbol fuchsin allowed to act for a long time, the two most suitable stains to demonstrate the bipolar characteristics of the organism.

The following is the growth characteristics as shown by the strains isolated at this laboratory.

Agar—5 per litre to phenolphthalein. Very rapid growth in 24 hours of small discreet colonies, having little tendency to spread, being almost transparent (dew-drop like). As the colony becomes older it becomes somewhat white. There is no change made in the medium by growth. Newly isolated agar cultures are very viscid. This characteristic has a tendency to be lost as the strain is subcultured.

Agar +5 per litre to phenolphthalein—no noticeable growth in twenty-four hours.

Glycerine agar—very slight growth.

Potatoe—no growth.

Gelatine—some growth in a week. No liquefaction.

Nutrient veal bouillon—5 per litre to phenolphthalein—free growth in 24 hours. Culture has a tendency to settle to bottom of tube and form a granular precipitate.

Chicken nutrient bouillon—5 litre to phenolphthalein—free growth in 24 hours, surface growth forms on this medium.

Liebig's broth (Ramorine)—5 per litre to phenolphthalein—no growth.

Liebig's agar (Ramorine)—5 per litre to phenolphthalein—no growth.

Toxin—I have not been able to demonstrate a true toxin produced by this bacillus. Death has taken place from the injection of 10 cc. of a filtered culture into a guinea pig. This is a large dose and it is quite likely the products of autolysed bacteria rather than a true toxin caused death. Baldrey (1) however, was able to cause the death of rabbits by the injection of a 2 cc. dose, so possibly the strain may play some part in the result.

Treatment of ill animals.

Treatment of ill animals promises unsatisfactory results. The ill should be isolated. Capt. Walker (2) recommends potassium permanganate. This might be tried. Symptoms should be treated as they arise.

The protection of the remainder of the herd is of more importance than the treatment. Healthy animals should be removed from those infected, and the premises kept disinfected from time to time, until the diseased animals have succumbed or recovered. A thorough disinfection should be carried out before well animals are allowed to return to their old quarters. Whether protective vaccination is or is not of benefit, is a much disputed point. The outbreak is so sudden and its decline under ordinary conditions in this country so rapid, that it is rather a poor experimental field for vaccines, and apparent results are rather misleading. However, vaccines will do no harm. A protective serum would be the ideal biologic for these outbreaks, as immediate protection would be afforded to the remainder of the herd.

Pathogenicity of organism.

We have found the strains of B. bipolaris septicus (Bovis) isolated at this laboratory, pathogenic for rabbits, guinea pigs, rats, sheep and cattle. Cats were immune to it. Sheep were found very susceptible to experimental infection. Besemer (3) has found that the B. bipolaris septicus (Bovis) was similar bio-chemically to other members of the Hemorrhagic Septicaemia group. It would appear probable that infections might be transmitted naturally from one species of animal to another species.

It might well be asked why a micro organism which lives for most part a saprophytic life is capable of suddenly reaching such a high state of virulence having its period of incubation so short, and producing death in such a short period of time. Two characteristics of the organism should be borne in mind when considering this phase of its pathogenicity. First, its saprophytic nature and secondly, its rapid growth on favourable media. Under normal conditions the organism is resisted and is confined outside the tissues. But for some reason this resistance is lost, the organism gains entrance and multiplies rapidly. If we accept the explanation of Vaughan (4) that is, the period of incubation is simply the period of education of the tissue cells to break down these foreign proteins, it seems likely that tissues already half educated against this saprophyte through constant experience would quickly, and completely learn to look after this foreign protein.

The B. bipolaris septicus would, therefore, be broken up by the newly formed tissue enzymes and the "products of cleavage" or endo-toxines set free. This, I believe, accounts for the short period of incubation.

There are several organisms which are analogous in this respect to the B. bipolaris septicus, among the chief ones being the diplococcus pneumoniæ, the streptococcus and the organisms of gas gangrene.

How to send a Specimen for Laboratory Examination.

Specimens are frequently forwarded to a laboratory which through the fault of choice of material or improper technique in collecting same, are useless for bacteriological examination. A few instructions are, therefore, given below.

Send, if possible, tissue that shows evidence of pathological change. A piece of pneumonic lung, I have found among the best tissues, from which to isolate the organism. The same should be mailed in a sterile container.

In addition one ounce vials of blood should be drawn aseptically from the jugular vein of all ill, convalescent, or contact animals.

A complete clinical history should accompany specimens.

References.

1. Baldrey, F. S. H.—Tropical Veterinary Science, July, 1907.
2. Walker, G. K.—Journal of Comparative Pathology and Therapeutics, September, 1912.
3. Besemer, A. M.—Journal of Bacteriology, March, 1917.
4. Vaughan, V. C.—Infection and Immunity.

SPORT.

The Federal Meat Inspectors of the Toronto District have introduced a new feature in their Social Life by organizing an indoor baseball league. The staff has now sufficient numbers to enable them to form four teams from representatives of the four largest packing houses in Toronto, namely: Harris, Gunns, Swifts, Davies. Most of these houses have athletic grounds attached which are at the disposal of the staff. Unfortunately the schedule games and dates are not available at the moment, but two good games have been played, Harris versus Gunns—Swifts versus Gunns. In both games Gunns were vanquished. The next game will be: Swifts versus Harris, and should be a well contested match. The daylight-saving and good facilities for practice will undoubtedly make the feature very popular among the boys.

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18 PUPPIES BORN IN SINGLE LITTER.

Aurora.—Over the home of Thomas Stevens of this town yesterday hovered the spirit of the late ex-President Theodore Roosevelt, who inveighed against race suicide. In the summer kitchen of the residence, Mr. Stevens' faithful hound, Betty, gave birth to 18 puppies.

In the opinion of Dr. Thomas Scrivener, V.S., this sets a new Canadian record.

At the latest reports the mother was doing well. Alas! Three of the puppies died, but 15 are hale and hearty.

Town Treasurer J. G. McDonald is busily engaged in figuring up the dog tax for next September.

A COUNTER-IRRITANT.

"Pa," asked little Thomas Glipping, "what's a counter-irritant?"

"A counter-irritant?" said Mr. Glipping, who was reading his paper. "I guess that must be a woman who shops all day and doesn't buy anything."

Proteid Food-Poisoning and its Detection

By John Amyot, Ottawa.

The kind of food-poisoning discussed in this report is that originating from the ingestion of animal flesh or its products that from extraneous causes have had developed in them certain poisons,—poisons strictly not intrinsic to them.

It does not include poisoning from the metals of the can or from the flux, from preservatives, coloring matter, condiments or improvers, though some of these substances, like the vanilla in ice-cream, might favor indirectly the production of the poisons.

The subject resolves itself into the discussion of what is so generally spoken of as "ptomain-poisoning." But strictly speaking the term ptomain poisoning is a very restricted one. At one time it was thought to be the whole explanation of proteid food poisoning. It is now known that though ptomains are harmful they are not the really serious element in this form of poisoning. In the chemical family ptomains are comparatively simple compounds (Alkaloids).

These "ptomains" are the secretions and the product of the interaction of bacteria and other low-organisms on proteid substances.

But these are not the only products of bacteria. Many bacteria produce specific toxines. Many of these are extremely poisonous. Bacteria also in the elaboration of their food split the proteid molecule into so-called cleavage products (Proteoses, albumoses peptone-like bodies, etc.), which are very complex and often quite toxic. The term "ptomain poisoning" is now made to include the poisoning from these toxines, these higher cleavage products, ptomains and the secretions and the excretions of the micro-organisms. We may then define ptomain poisoning as that form of food-poisoning due to the combined action of the specific toxines, other products, secretions, excretions, etc., of low-organisms especially bacteria and the altered original proteid of the food involved, or some simpler combination, or any one of these. It is not just a poison interjected but in addition an alteration of some constituents of the original food into poisons.

Many of these poisons are destroyed by heat approaching the boiling point of water. Some are not affected materially by boiling. Some are apparently not at all affected by boiling.

Many of them will pass through porcelain filters (some do not.) Most of them are affected by the usual chemical re-agents, especially oxidizing ones.

Some pass into the circulation from the intestine without hindrance. Some of them are held back by the intact mucosa of the intestine. Some are digested apparently by the alimentary enzymes and rendered inert.

These poisons are formed by such bacteria as attack the higher proteids. As the proteids become step by step simplified the products are usually less and less poisonous.

The bacteria bringing about these poisonings are comparatively few in number, because the bacteria attacking these higher compounds are few in number.

There are the "Pathogenic-Parasites," or those producing their poisons in living tissue. These are the ones causing equally the infectious diseases of man and animal.

There are the "Pathogenic Saprophytes," those producing poisons in dead flesh. These produce intoxication when ingested. There is a third. group, the "Pathogenic parasites-saprophytes" which can do both, produce poisons in dead flesh and when ingested still living infect the ingestor and even be transmitted to others.

The first is represented by those organisms such as the anthrax bacillus, the bacillus of malignant oedema. Welch's bacillus, the bacillus of haemorrhagic septicaemia, invading all the tissues, leaving their poisons in the tissue and producing universal alteration of it in the food animals affected, and also by the pyogenic organisms producing local alteration of the tissues and general intoxication. Besides poisoning, infection as well may overtake the ingestor.

The second group is represented by such organisms as the B. proteus, the Bacillus botulinus and the Bacillus subtilis, which produce their poisons in dead flesh. Some of these produce obvious changes, some of them produce almost imperceptible changes in the tissues, yet all are very poisonous in their results. They, however, do not infect.

Then there is the third group represented by the Bacillus enteriditis, the paratyphoid bacillus and the Bacillus coli and others, which attack living tissue and dead tissue as well, and can in addition to poisoning give rise to infection in the ingesting patient.

Not enough is known positively of other types of organisms to require consideration here.

Specific Diseases, Poisoning and Infection.

It is generally conceded that the food-poisoning under discussion may come about in some of the following ways. 1. The beef or veal from cattle that have suffered from anthrax, symptomatic anthrax, malignant oedema, infection from the Welch bacillus, the bacillus of haemorrhagic septicaemia or by the pyogenic bacteria in general infection or in local infection is poisonous when taken as food even though the processing has killed the bacteria. It may produce death. If the food is taken only partially cooked, or not cooked, in addition to the poisoning, the person using such food may become infected and die of the same disease as the original was sick from. The flesh of chickens suffering from haemorrhagic septicaemia or from pyogenic infection will act in the same way under the same conditions. Fish and so-called shellfish are not known to so act.

In these diseases the specific bacteria leave their specific poisons in the tissue and also alter the tissue into poisons. If the organisms are still living when they enter the body of the victim they are apt to produce an infection as well as poisoning. If they are dead then only poisoning takes place.

Poisoning by Pathogenic Saprophytes Acting on Flesh of Healthy Animals Before and After Ingestion.

The flesh or its products in manufacturing from perfectly healthy animals may become infected during the handling, etc., by the B. proteus or the B. subtilis, as these are practically universally present and unless kept continuously cold or immediately sterilized by cooking or by preservatives, the organisms multiply rapidly, and as rapidly bring about alteration in the material, produce toxines, cleavage products, ptomains, etc., and if the flesh is eaten raw as in certain sausages enough poison may have been developed to produce poisoning. If, in addition the living organisms are swallowed, with the food, from the start they have already got in it and from the altered digestion produced by the poisoning they may go right on producing their poisons in the intestine, and thus the poisoning be continued.

If this poisoned food, however, is thoroughly heated long enough at from 212 F. to the processing temperature for even ten minutes these poisons are destroyed and no intoxication takes place, and this is fortunate for us seeing that the risks of infection with these organisms (B. proteus and B. subtilis) must from the universality of these organisms be so frequent.

Infection of fresh food with the Bacillus botulinus is a comparatively rare accident in this country. Fortunately, also it is an anerobic organism and rarely finds conditions favorable for its growth with us. It is common in those portions of Europe where raw or comparatively raw meat is used in making certain types of sausages and where the sausages are very thick and enclosed in thick, practically air-proof casings. Boiling completely destroys the powerful poisons of this organism.

Poisoning by the B. proteus, B. subtilis, and B. botulinus in Abnormal Individuals or in those Receiving a Larger Infection.

3. Poisoning may be brought about in people whose digestion is disordered if they ingest from some source a large number of these bacteria (B. proteus, B. subtilis, B. botulinus) quite independently of a food in question. A normal individual might ingest an abnormally large number of these organisms, and then not be able to hold them in check.

The food may be perfectly good but meeting these organisms in the alimentary tract, the food may be there altered and poisoning take place. This accident is probably more frequent than has been supposed. The food has been blamed unjustly. The individual himself might be solely to blame. The organisms came from the outside in small number. They developed to large numbers in the intestine, or it could be conceived that a very large number were taken in with some material that was in insufficient quantity to allow of giving rise to enough poison to intoxicate, but be in sufficient quantity to serve to carry in such a large number of organisms as to make it impossible for the body to hold them in check. A small fire can be checked, a big one is more difficult or impossible to control.

Poisoning by the Products and Infection with the Colon Bacillus, the Paratyphoid Bacillus and the Bacillus enteriditis.

4. The colon bacillus is present normally in the intestine of all warm-blooded animals. The Bacillus enteriditis is usually present. The Bacillus paratyphosus is frequently present, in cases being the cause of a disease in animals resembling the Typhoid Fever of man.

Now, in places where animals are killed these organisms are almost certainly lying all about. During killing, the flesh, be it beef, mutton, pork or fowl, becomes soiled with the material containing all of or any one of these organisms. Fish becomes infected, when they do, with these organisms, from the water that they were taken from or the water that they are washed in, or from the hands of those handling them. It is usually in the handling that the infection takes place, especially during the process of "drawing" or eviscerating. The infection may be brought about also when the flesh is washed, especially as this is so frequently done with infected water so common about such establishments. It appears a dirty business, why worry about a little more dirt? So questionable water is used. It is on account of this that so much objection is now rightly taken to "drawing" fowl and fish. "Drawing" can be done in such a way as to avoid infection, but it is rare that those who do this work know the danger or have the skill requisite to prevent infection of the flesh of the fowl or fish they are "drawing." Then, again, it often happens, in fact, nearly always is the case, that those handling such food don't realize the necessity of cooling to near the freezing point or below it at the earliest possible moment after killing,—minutes where it is possible. Often the carcases are left about for hours before they are cooled to the inhibiting point. Such products should be cooled immediately, not half an hour or hours after, but immediately, otherwise these three organisms especially develop and develop rapidly, and even though cooled to quite a low temperature afterward they (the organisms) will go on growing for some time and during their growth produce quantities of toxines, cleavage products, ptomains, etc., and these poisons are not destroyed by heat, even the heat of processing. If the material is not heated sufficiently to kill the organisms, and it requires a good deal to kill even B. paratyphosus, but more to kill B. enteriditis, those eating the material may become infected. The organisms especially the paratyphoid bacillus and B. enteriditis will then grow in the intestines, continue the production of the poison already begun, and even in certain cases find their way into the tissue of the victim and cause distinct disease. Aside from the poisoning and the disease in certain cases the infection is transmissible to those around the patient.

This type of food-poisoning is extremely common, perhaps the most common type of food-poisoning.

Poisoning from Gelatine.

5. In the preparation of certain kinds of canned goods, chicken, tongues, etc., gelatine is used to complete and help out the jellying. This gelatine is not prepared on the ground usually, but is bought from some other manufacturer. Gelatine is made generally from the tag ends of hides and the scraps from about butcher shops and slaughter houses. The raw material is assembled from numerous sources, and is often quite decayed, or at least high when finally ready for manufacture, and must very frequently contain the poisonous products of bacterial action. During the process of manufacture, these bits of tissue are exposed to the long continued action of strong lime. This probably destroys much of the poisons that may have been previously formed. Next the bits are washed over a continued time in water. These poisons are practically all soluble in water. Therefore, practically all of them are removed by this washing. Finally the material is boiled and evaporated down. The bacteria are thus killed and of those poisons that might yet have remained those that are destroyed by heat are done for. Now, the final product gelatine is scarcely sufficiently complex to give rise to highly poisonous materials even though the requisite organisms should grow in it. The material is not in it that will produce high-order cleavage products.

Gelatine, however, is a fair medium for bacteria to grow in and in a few hours a few bacteria might easily become millions.

During the process of drying the sheets, very primitive methods are still in use even in the more modern gelatine factories. The gelatine is exposed on wire netting in tiers usually in long tunnels, through which dry air is driven. Usually very little precaution is taken to have this air purified, and about such factories there is very little dust-free pure air to be had. (The handling is careless also, the stuff thus also becoming infected.) The air often contains such organisms as the colon bacillus, in fact, is rarely free from them. Even at times the Bacillus enteriditis and the paratyphoid bacillus are to be found. The Bacillus proteus and Bacillus subtilis, like the colon bacillus, are practically always found. The gelatine is moist for hours and the temperature being warm enough, the conditions are extremely favorable for the rapid growth of the organisms above-named. Of course, the gelatine sheets that get the first air and those sheets on the outside are the ones most apt to have dust (germ laden) adhere to them. The inner sheets often escape being dust powdered. Thus is accounted for, the fact, that certain sheets of gelatine out of a package are infected and others not, and that some parts even of a sheet would kill guinea-pigs and others would not. Organisms in colonies. Billions of colon bacilli per c.c. have been found in what are considered the best gelatines on the market; much smaller numbers would kill guinea-pigs, apart from any poison injected into them if the bacilli were still living.

For the reasons given above, though the organisms named growing on fresh meat would produce poisons, on gelatine though growing well and abundantly they would not find the material in the gelatine to produce complex poisons.

Danger of Gelatine Added to Jellied Foods.

Now, as to the danger from the gelatine added to make jellied meat, even the best gelatines or many of the sheets show large quantities of bacteria. When these are added to the tongue, chicken, etc., if it is not immediately brought up to a heat sufficient to inhibit or kill the organisms these grow and in the material of the tongue or chicken produce their poisons. The after processing will not destroy these poisons, and thus some poisonings may be accounted for. (Gelatine long stored shows less and less bacteria, especially if phosphoric acid or other has been used to neutralize remaining lime and to clarify it, or when sulphurous acid has been used to bleach it.

If the mixture was immediately processed (before the bacteria had time to grow and produce their poison) the organisms would be killed and no harm done.

Delays in the intermediate processes of food manufacture are common. It is during these delays that food poisoning may be brought about. (Often the poisoning of the food has taken place long before the gelatine is added, when the chickens are killed "drawn" and carelessly kept.)

When the process of manufacturing gelatine is kept in mind one need not wonder that some sheets are infected and some are not and that some in the same package are not, and that one portion of an individual sheet may be infected and the rest not.

Also, extended investigations of various gelatines have demonstrated that even the best of them are infected and often very abundantly, also that gelatine has not got the material in it to make poisonous cleavage products out of.

The tongue or the chicken, etc., may be infected before the gelatine is added and this is probably the most frequent occurrence.

With the above as the basis, the following procedure in the examination of animal food products would seem justified.

It could hardly be expected that all the details in the space it seems justified in occupying, can be gone into in connection with this subject. The general principals only will be attempted.

(To be continued in next issue.)

Contagious Abortion and Sterility of the Dairy Cow

By T. H. Jagger, Vancouver, B.C.

Present day veterinary literature is rich with articles on this subject. All kinds of opinions are expressed, and we notice that there is quite a tendency to try to belittle the great work of Prof. W. L. Williams on this disease. When we analyze all the different methods employed, we find that they depend on the Williams' treatment for a basis, and the different modifications put forward is an attempt to claim originality where none exists.

We can say without fear of contradiction, that abortion disease and its sequelae, are causing more annual loss at the present time in the herds than that due to bovine tuberculosis. Every practising veterinarian, therefore should strive to have a broad knowledge of abortion disease and its complications, in order that he may intelligently point out to the dairyman what he may expect from its ravages, and the best sanitary measures to adopt, to at least minimize its dangers. It is from this angle that we wish to say a few words on this disease.

Abortion disease shows itself in so many different forms that it is very difficult for the dairyman to recognize it in all cases; and in fact a great many veterinarians fail to connect certain conditions found in dairy herds with abortion disease. The herd history is very instructive, when we are called in for our advice or to treat this disease. If the affected herd is a large one, a number of animals will be failing to conceive. These may be either mature cows or heifers. Among them will be found nymphomaniacs; animals with retained placenta usually in large numbers; others which abort from a month to a few days unnoticed, while the actual abortions of dead calves may be numerous or very scarce, depending on the peculiarities in any given herd. On the other hand numerous animals will conceive and pass one or more estral periods before being returned for service, while an occasional animal will conceive and yet continue to take service at irregular periods. Quite a large percentage of animals in such a herd will discharge large amounts of pus after calving and will occur whether the afterbirth is retained or not. This discharge may not be apparent for some days after freshening.

Another form of history often given is that the herd was badly affected with abortion some two or three years before, but that the trouble cleaned up of its own accord and there have been no abortions since. In these cases when careful inquiries are made, however, we find that retained placenta, sterility, etc., are giving considerable trouble. New animals brought into such a herd invariably abort, and the owner will be sure to say that they were diseased when bought, which may or may not be the case.

Abortion may take place at any time from the first few days after conception to the end of gestation. Those abortions which take place during the early period of gestation are very often overlooked. The length of time the fetus is retained in the uterus depends on the virulence of the infective organism and the lesions produced. Thus in very severe infections the animal may fail to conceive owing to the character of the lesions and the animal falls under the class of sterile cows. This sterility may be permanent or temporary according to the character of the lesions.

In a milder form of the disease the animal conceives and carries the fetus for a few weeks or months. In a still milder form the fetus is carried to the seventh or eighth month and may be expelled dead or alive, while in the mildest form of the disease the calf will be born at the end of gestation. This calf may be apparently healthy or it may be very weak. In many cases they are covered with a thick coating of yellow slimy matter, which is the result of fetal diarrhoea.

The lesions and conditions found in abortion disease vary greatly according to the chronicity of the disease and the stage of gestation at which the abortion takes place. We find some very severe inflammations and catarrhal conditions of the vaginal mucosa. In the non-pregnant animal unhealthy vaginal conditions may prevent conception, although some animals do conceive when in this condition. Having an animal served when in this condition, however, is only inviting trouble at a later date.

In the cervix the lesions may vary from a slight superficial inflammation without much swelling or proliferation of tissue, to those severe cases where the cervix is very dark in color, swollen, hard and often twisted out of its normal shape. In these cases the inflammation is deep seated and slow to respond to treatment, but by persistent attention a large percentage will clean up.

We next come to the body and horns of the uterus. The pathological conditions of this part of the genital tract varies a great deal. There are cases where only a slight catarrhal condition is found (which rapidly responds to treatment), to the severest forms of inflammation, in which the walls are unable to contract, and the uterus hangs in the abdominal cavity a large flaccid mass, full of fluid or pus, and is spoken of as metritis.

Severe cases of metritis very often follow parturition, at or near the full term of gestation, and are very interesting since a clean healthy calf is obtained from such animals. From personal observations we are convinced that while there may have been a slight metritis prior to parturition, a severe infection takes place during and shortly after parturition, and accounts for the severity of the symptoms. Cases of this type can usually be traced to lack of sanitation at parturition, and we venture that the time is approaching when valuable dairy cows will be given the same sanitary care at parturition as is demanded in the human.

Metritis requires very careful handling if the cow is to be saved for further production of offspring. The best treatment we have found is the repeated flushing out of the uterus with normal saline at about 110 degrees Fahrenheit. This procedure is carried out daily for the first eight or ten days, using from six to eight gallons at each washing. Injection pumps are not recommended. The best plan being to use a gravity system and syphon out the liquid or pus. In carrying out the treatment we never allow more than two quarts of saline solution to flow in before syphoning off. This avoids undue weight being added to an already weakened uterus. No instruments are required during the first eight or ten days as the cervix is sufficiently open to admit a soft rubber horse catheter.

During the first eight or ten days the discharge is of a dirty chocolate colour and very offensive in odor. Later it changes to a thick yellow pus. At this stage the uterus usually begins to contract and a 2% Lugol's solution may be used as an antiseptic wash. When this treatment is persisted with for some weeks the condition usually responds, making in many instances a very good recovery. If cervicitis is present swab the cervix throughout its length with pure Lugol's solution at least once a week. The length of time required to reduce the cervicitis depends on the depth the inflammation extends into the tissues of the cervix. Some cases are very persistent, but the majority of them will respond to treatment.

A rather frequent complication found in cases where the uterus fails to contract after parturition and fills up with pus, is septic pneumonia. This condition will not respond to treatment until the diseased condition of the uterus is overcome. Treatment of the pneumonic condition only will result in the death of the animal.

Passing from the horns of the uterus, we come to the Fallopian tubes. If the infection causes inflammation in the tubes directly or by extension from the horns, or in case of cystic formation in them, there is absolutely no hope for recovery and the owner should be advised accordingly.

We next come to the ovaries. These organs are frequently affected with cystic degeneration. Just what connection there is between these cysts and infection with bacillus abortus has not been determined. We have however, repeatedly obtained a negative reaction to the complement fixation and agglutination tests for the bacillus abortus, in cows that had cystic ovaries. This would demonstrate that these cysts are due to some other agent or agencies. At present the only effective treatment for cystic ovaries, is to repeatedly rupture the cysts. When continued over a sufficient length of time about 70% of the cases terminate favourably.

The lesions of abortion disease are largely responsible for sterility of the dairy cow. Thus we find unhealthy conditions of the vagina, cervicitis, metritis, endometritis, pyometra, salpingitis, also cystic conditions of the ovaries and Fallopian tubes, are all capable of causing temporary or permanent sterility.

Handling a herd in which abortion disease is present, with a view to eradication or control of the disease, presents many difficulties.

The complement fixation and agglutination tests can be used to good advantage, especially where the owner wants to know the extent of the infection. We have found these tests very reliable and use them to get the knowledge necessary to segregate diseased from healthy animals. We cannot be too particular in emphasizing stable and breeding sanitation. The stable should be thoroughly cleaned and white washed at frequent intervals and a system of sprinkling the floors and gutters each day with some good disinfectant adopted.

Any animal showing a discharge from the vagina should be kept from contact with other cattle and the hind quarters and udder frequently cleansed. Do not breed a cow showing any discharge of pus, and have the bull thoroughly cleansed before and after each service. This is done by flushing out the sheath with a half per cent. lysol or with Lugol's solution. The method adopted by us is to allow the antiseptic solution to flow from an elevated douche can through a soft rubber catheter into the sheath. By grasping the neck around the catheter the sheath can be filled. When filled a little pressure applied to the lower surface of the sheath forces the antiseptic solution to the various parts. This process can be repeated several times if necessary.

Undoubtedly the bacillus abortus is passed on to the calves fed on infected raw milk. To overcome this origin of infection, pasteurization of milk should be adopted before feeding calves.

In connection with sterile cows it is quite common to hear veterinarians say they were called in to see a case, and on introducing their hand into the vagina, opened up the cervix. We would advise our professional friends to discontinue these wild statements, because the stockman will soon know better. No human finger can be introduced through the entire length of the cervix in a sterile cow, and any attempt to do so only results in lacerating the mucuous membrane of the outer folds of the cervix, which will intensify any previous cervicitis.

For The Betterment of The Profession*

Lt.-Col. R. L. Mundhenk, Biological Department, The Abbott Laboratories.

Particularly within the past few years there has occurred to many the idea that, due to some peculiar psychology of the American, there has been growing within many of us a tendency to make things in general much more difficult and complex than they actually are.

This attitude has in no sense been confined to any particular circle, but is found in practically all walks of life, business and military as well as professional and scientific.

It appears that the major part of this peculiarity may be ascribed to three things. (a) Slavery to routine detail and an unconscious self-absorbed attitude on the part of busy men. (b) Reluctance to abandon obsolete ideas and methods even when partially or wholly supplantable by newer and better ones, together with a tendency to judge new developments by first trial results. (c) Lack of a thorough comprehension of certain fundamentals and consequent failure to properly classify and co-ordinate related facts gleaned by experience.

While it cannot be truthfully said that the above tendencies have to any serious extent retarded the remarkable strides made in practically all lines of endeavor within the past decade or so, it has at least forced us to exert far more energy in the accomplishment of certain results than would otherwise have been the case.

The effects of these tendencies on the veterinary profession in particular may be summed up in the following charges:

IN SURGERY. Although the principles of antisepsis have been accepted by us to the fullest extent, for years the fact that field conditions render impractical aseptic surgical operations, particularly on the large animals, has been allowed to effectually block us from a greater development of this wonderful field.

To be concrete, why have we not thoroughly investigated the possibilities of major surgical operations under sterile conditions on the larger domesticated animals rather than accept that the present impracticability of asepsis in the field precludes the possibility of its future quite general adoption?

Granting purely for the sake of argument that such operations are, and probably will be for many years, impractical in the field, one cannot estimate the enormous knowledge to be derived from a series of laparotomies performed on cases of acute equine colic or the good which might arise from experiments in the transplantation of ovarian tissue in cases of bovine sterility, apparently due to cystic atrophy.

Granting the expense and the possible loss of a certain number of animals until the technic has been developed to the proper degree, it is not unbelievable that such investigations might reveal possibilities which would lead later to the establishment in more closely settled districts, of centrally located county hospitals with motor ambulance service, in which practitioners lacking personal equipment could operate in a manner similar to that long since employed in the medical profession but undoubtedly undreamed of by them thirty or so years ago.

IN PATHOLOGY. The success of many early and some more recent investigators in the isolation of certain microorganisms and the proof of their guilt as the causative agents of specific infectious conditions appears to have caused many of us to regard practically all nameable diseases as entities and by elimination, more than absolute proof the etiological factors of those which could not be connected with certain bacteria or protozoa to be filterable vira.

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*Read before the Ontario Veterinary Association, February 17th, 1921.

Without underestimating in any way the importance of filterable vira in the causation of disease it is nevertheless the case that undue absorption in the search for specific organism and vira has switched certain investigators from the possible guilt of the numerous and practically omnipresent so-called secondary invading organisms, all capable of the prompt assumption of intense virulence under conditions of lowered resistence.

We have also overlooked many of the possibilities of later and seemingly disconnected sequelæ from such common organisms as the streptococcus, staphylococcus, colon bacillus, etc., the former alone being by some pathologists accredited with being the cause of a fraction of human ills estimated as high as 50 per cent.

IN CLINICAL PRACTICE. Do we not, as do our friends in medical profession, often fall unto a rut, diagnose our cases by name and prescribe a drug or compound that has been observed by us or recommended by others to effect cures in similar ones?

Is it not simpler to analyze our disease conditions into their pathological entities, which in by far the greater majority of cases come at last to that basic reaction to irritation—inflammation, with its four cardinal symptoms and five causative factors and the several morbid changes which are set up when the inflammatory process is unsuccessful in its reparative endeavor?

Logical elimination usually leads us quite promptly to the cause and after its removal or mitigation our only problem is the choice of the suitable medicament with its adjuvant, correctives and vehicle, in cases in which the latter are necessary.

IN EDUCATION. Although but a comparatively small number of our profession are themselves engaged in educational work, is it not true that we are prone to neglect our responsibilities with regard to the grade and high schools as well as to veterinary colleges?

The faults of our elementary educational institutions have been pointed out so frequently that it seems scarcely fair to heap additional criticism upon the heads of the members of a calling who are undoubtedly doing their best under circumstances as they are.

The first step in the betterment of our schools must be taken by the owners—i.e., the public, rather than by the employees—the teachers.

These steps must be in the way of additional appropriations for salaries and equipment and only in cases in which these are provided will satisfactory results be obtained.

The outstanding faults of these institutions which are reflected throughout the later education and often the entire life of the individual, are, that while they succeed admirably in the dissemination of a conglomerate lot of knowledge by the training of the memory, they fail to develop the pupils' own thinking apparatus with the result that many high school students are graduated either to continue their education in our various colleges or to enter directly upon their life work without the slightest conception of how to think for themselves.

In many cases it is unjust to use the word failure with regard to our school system for one cannot fail in the thing which he has not tried to do and the development of the brain as a thinking machine in many cases is apparently not even attempted.

For years we have been content to regard the brain as a memory tank alone, a sort of a series of pigeon-holes in which various bits of information are to be classified and filed for future reference as needed.

Without attempting to detract from the value of memory training and recognizing that a considerable amount of our education, particularly the vocabulary, must be obtained in this manner, it is still an outstanding fact that the primary function of our higher brain is that of deductive reasoning, imagination and sound and creative thought.

The remarkable thing about it all is the progress which has been made under conditions which have rendered it necessary for each man to learn from experience first the necessity for and later the method of doing original constructive thinking.

Nearly all knowledge may be quite simply divided into five parts, answering the questions "what?", "when?", "where?", "how?" and "why?". Although the first three questions have been fairly well answered with regard to numerous of our problems, we remain in comparative darkness as to the "how?" and in many instances in absolute ignorance as to the "why?" When additional light is thrown on these perplexing problems it will be the direct result of original brain work.

To consider our veterinary colleges in particular, it is undoubtedly true that with the usual exceptions, here and there, they can be improved by the adoption of broader principles of organization and methods of instruction.

In the first place certain of our colleges are retaining largely their own graduates as members of the instructional force, rather than obtaining the broader outlook made possible by a more varied range of ideas. By this means their faults are gradually increased in a manner quite similar to the unsatisfactory results obtained by persistent inbreeding in certain strains of animals.

It is universally admitted as desirable that our veterinary educators be men of broad training, not only in our own profession, but also in their special branches of bacteriology, anatomy pathology, chemistry, physiology,, histology, embryology, pharmacy, therapeutics, surgery, etc., and it is here suggested that they be given opportunities to gain this additional training while serving as junior instructors at liveable compensation.

There should be closer correlation of the various branches of the curricula with the anatomist, pathologist, bacteriologist, physiologist and others in attendance at clinics for the clinching of their subjects by example and the imparting of a knowledge of the living rather than of the dead.

There has been suggested in this connection the installation of a system of lectures, quizzes, demonstrations and seminars in connection with clinical work in which students would be required to make and support diagnoses and prescribe and administer the remedies, all subject to the criticism of their fellow students and the approval of the instructors. With this will come didactic and practical instruction in the proper methods of arriving at a diagnosis and the choice and administration of the treatment.

Field experience also calls for a rearrangement of the anatomy whereby the student is taught to visualize the anatomical features of the living animal rather than of the cadaver and to a far greater extent than at present, the external as well as the internal anatomy.

Equally desirable is the insertion of sufficient physiology and physiological chemistry of a distinctly veterinary type to insure fair knowledge of the normal physiological processes of the various domesticated animals and birds. By "veterinary type" reference is made to special studies of the flight of the hoofs of equines in their various gaits, to the hyper-developed lactation and reproductive apparatus of bovines, to a comparison of the digestive arrangements of the various animals, particularly of the ruminant, and to a general comprehensive study of the unusual body processes of fowls.

The courses in bacteriology might also well be changed so as to pass over with mere mention and brief explanation, those organisms not concerned as etiological factors of disease and the complex laboratory methods which must always be left to the specialist, with additional stress on the common pathogenic bacteria and the theory and application of modern biologics in the prevention and treatment of disease.

There should also be considered the development of separate departments of, or courses in, preventative medicine with reference to quarantine measures and prophylaxis both medicinal and biological.

The addition of at least one semester or term of physics, particularly those of liquids and gases, and the modification of the courses in chemistry with a view to the laying of a general foundation only, emphasizing particularly the organic compounds, and the elimination of the now rather extensive work in qualitative and quantitative analysis which can never be of much except academic interest to the practitioner, need meet with the approval of the undergraduate students as well as the alumni.

The addition of pharmacy so that the practitioner may more advantageously utilize the services of his druggist, and be enabled to understandingly purchase, prescribe and dispense the various necessary medicines has been felt by every graduate entering general country practice.

The insertion of a course in jurisprudence and business psychology, with lectures on ethics, fees, credits, bookkeeping, banking and business and professional relations in general, would far better prepare the recent graduate to open and conduct his practice in a manner creditable to his calling.

Although we would strongly resist the advancement of the idea of the day of the horse has passed, we will admit that the day of the cow, hog, sheep, goat, dog, cat, rabbit and chicken, are here and that it is no longer practical to teach our students any of the branches of veterinary science largely on an equine basis with only minor references now and then to the other animals and then graduate them to a practice, consisting largely of porcine and bovine or perhaps of canine and feline work.

Therapeutics and Theory Practics should include the consideration of newer medicinal and biological preparations and the subject should be discussed in detail rather than be dismissed with the statement that "biological treatment is claimed to be of value." The application of true vaccines, bacterins, immune sera, cultural filtrates and diagnostic agents with their indications, contraindications and medicinal adjurants should be dwelt upon. Such instructions will go far to prevent the empiric use of these preparations to better the results offered from them and to raise the standard of the business built around their manufacture and sale.

IN RESEARCH WORK. Our investigational work should be conducted with the object of reduction of mortality from and the ultimate wiping out of disease conditions rather than as a series of experiments recorded mainly for academic interest or for purpose of publicity and the honor of naming a new variety of bacteria.

Although many still insist that there is no difference between the theoretical and the practical, it is quite generally recognized that these terms like most others are relative and that the present demand is mainly for research work of a practical application.

While the experimentation on laboratory animals, undoubtedly has its place, the profession has reached the point where it is no longer content with "Guinea-pig findings" alone and demands that a product or series of products stand or fall according to results produced in daily field use.

As our investigators approach field conditions, particularly in inoculation experiments, their endeavors will be accorded more and more the honor which will then be due them.

To offset the possible charge of lack of correlation between the above criticism on research work and that on surgical work, it may be stated that while the betterment of hospital facilities may not be many years in the future, it is yet impossible to even conceive at any time of the total destruction of all pathogenic organisms.

Lastly as citizens and members of an educated profession we owe it to ourselves and our vocation to take an interest in our local and national politics, our educational systems, both elementary and professional, our laws, particularly those relating to live stock endeavors, and to moral, charitable and religious institutions and movements in general.

We may convince ourselves from the selfish standpoint if not the altruistic alone, that such interests broaden and better us, in addition to making the world in general and our section of it in particular a better place in which to live and work.

With regard to any of the above remarks which may appear in the light of harsh criticism, the writer wishes to explain that not a single one of the foregoing statements has been aimed at any person or group of persons in particular and (reverting to slang) wishes to request that the shoe be not worn by those whom it does not fit.

Criticisms of all endeavors are of value only when constructive and the best conception of a constructive criticism is one which enumerates the errors, seeks their source and suggests methods of elimination. This method the writer has endeavored to follow. The points mentioned above are those which have presented themselves in an experience involving practice, teaching, Government service and commercial work.

The prerequisite requirements are undoubtedly having their effects in the raising of the quality of applicants to our veterinary colleges, even though their number is markedly decreased.

With the passing of the private schools and the effect of the war, the shortage has been particularly marked, but as the laws of supply and demand are supreme in all such conditions it is merely a question of time until the matter will re-adjust itself and if the answer to the question turns out to be as appears probable, fewer veterinarians, but better ones, the situation will ultimately work out to the advantage of all concerned.

With the added fields of sanitation, food inspection, etc., now being entrusted more and more to us, with the advancement which is daily being made with regard to prevention of disease and with illegal competition being gradually relegated to the scrap heap by legislation, the future looms far brighter than the past and the status of the veterinarian appears more secure.

During the college session Dr. Irvine arranged for a series of lectures by Professor R. D. McLaurin, Ph.D., for the Inspectors of the Health of Animals Branch in Toronto, on packing house chemistry. Professor McLaurin was until recently at the University of Saskatchewan, and is now Research Chemist for the William Davies Packing Co. Meetings were held on Monday evenings, and through the kindness of Dr. McGilvray the use of one of the college class rooms was obtained for the purpose. It is intended that these lectures shall be continued this fall.

Better Dairy Cows*

J. B. Hollingsworth, Ottawa.

As you are probably all aware I have been for some time in charge of a City's Food supply and especially the milk. In starting this work about fifteen years ago, I was surprised to note the amount of milk produced on different dairy farms, one especially that of a young man raised in the city. He bought a small farm and started to produce milk. He kept ten cows milking, and in the month of February was producing forty gallons a day, while his neighbour on the next farm was milking twenty-five cows and producing thirty-five gallons of milk a day.

It has been said that 50 per cent. of the cows are kept at a loss, 25 per cent. are just paying for their keep and any money that is made is out of the other 25 per cent. There is a great opportunity for the Veterinarian. In no line of agricultural work in Canada is there a better opportunity to increase production that there is in the improvement of the dairy herds. The average yield of milk per cow in Canada is only about 4,300 lbs. per annum. Compare that with individual records of over 25,000 lbs. of milk in a year and herd records of over 10,000 lbs. per cow. My object in bringing the question of better dairy cows to your attention is that I am firmly of the opinion that the Veterinarian, especially the young graduate who is fortunate enough to be practising in a dairy district, should take more interest in the breeding and selecting cows of good dairy type and should study the question of live stock improvement so that his advice will be sought for. He may find that probably the greatest hindrance to the successful building up of a dairy herd is that the farmers do not fully realize the importance of using properly bred sires. Many farmers with just common cattle are desirous of entering the dairy business and usually their first problem is to decide the best method of getting there. Shall they buy in or grow in? There are two ways in which a farmer can improve his dairy herd. First, he may sell the cows he has and buy new ones; or second, he may keep records of the milk and fat produced by each cow, breed the best cows to a sire that has a long line of heavy producing ancestors and then raise the heifer calves. The first plan is the quickest, but likely to be the most expensive. The second plan is good for the reason that it develops and trains the owner to handle successfully his herd as it develops year by year into a fine piece of machinery. The next step is to know the good cows. This knowledge can be obtained accurately enough for all practical purposes by weighing the milk and taking a sample for testing night and morning on three days each month, say 1st, 11th and 21st. The total of weights on these three days multiplied by 10 gives the pounds of milk produced in 30 days, and the pounds of milk multiplied by the test divided by 100 gives the pounds of fat. A question that is often asked is, can a good herd be produced from a foundation of common cows, by the introduction of a good sire? Wonderful results are obtained even in the first cross and there is no question that many farmers can build up an efficient dairy herd by using the cows he already has as foundation animals.

Constant selection of a good type will increasingly intensify the properties of a given set of characteristics, (in other words, of a definite type). Selection should be designed to correct faults in the parents, and as a rule the male is depended upon to do it. For instance, if the female has a tendency to be leggy, select a male that is compact and close to the ground.

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*Read before the Ontario Veterinary Association, February 17th, 1921.

If the backs are not ideal select a male with an exceptionally strong back. We might multiply these illustrations indefinitely. Therefore a sire should be a better individual than the females with whom he is to be mated. Otherwise the standard of the herd may decline. The breeding animals selected should look the part. Good bone, deep chests, strong broad backs and fully developed bodies should be emphasized, healthy and vigorous, and special attention should be paid to the head for that part of the animal tells many a story which otherwise would be overlooked.

It is not necessary in my opinion to spend a large sum of money in purchasing the sire. We have in Ontario thousands of first class calves slaughtered every year for veal that would do credit at the head of many of our dairy herds. Therefore the cost of a well bred bull calf is within reach of every intelligent farmer. Too many farmers to-day just raise a bull "because it is a bull." If one of their cows should happen to drop a nicely marked calf, it is raised to head the herd regardless of its ancestors. The country, yes, the whole world, needs more and more of the highly nutritious food produced by the cow. It is the bounden duty of every cow owner to endeavour to increase the production of his dairy herd. It is the common experience of all dairymen who have used a really good improved dairy sire that the investment has made them royal returns. It is therefore, up to us as Veterinarians to do our part. We who travel the highways and byways can do so much if we would only try. It is not by renting a school house in a country district and delivering an address on better breeding of our farm animals, but rather by individual effort that best results are to be obtained. Again as Veterinarians and citizens, we cannot escape our responsibility, and surely we do not wish to shirk it. Let us talk and teach and advise, let us do it in an intelligent, conservative and persistent way realizing that if we do our part as we should the veterinary profession will have accomplished a great deal of good for humanity and the dairy industry, and for this great country of ours of which we are justly so proud.

Report of James R. Shand, M.D.C., appearing in The American Journal of Veterinary Medicine.

Shelled Walnuts which are Shipped to the U. S.—Walnuts are shelled by Chinese women and young girls. These people hardly know the meaning of soap and water. The only time Chinese females take a bath is when they are admitted to a foreign hospital. It is compulsory for them then. One can imagine the stench issuing from a horde of fifty Chinese females from the age of seven to seventy years, squatted on the floor of a godown shelling walnuts. They have all the diseases that the human being is liable to. They bring their babies with them and in most cases the babies are infected with smallpox, inoculated purposely by the mother, by scarifying the child's nose and rubbing it with the scab from a patient suffering with smallpox. There are absolutely no sanitary arrangements provided for these women, and the babies urinate and defecate on the floor where the nuts are. The floor of the godown might have been used between seasons for the storing or working of any cargo, such as bristle hides, skins or human hair, etc. The floor is simply swept clean, and the nuts dumped on it; the Chinese women squat with their babies alongside the nuts, and the shelling begins. The nut is cracked with a stick and the kernel extracted. If any part of the kernel sticks the remainder of the shell is cracked with the teeth of the women. They spit and blow their noses with their fingers and hands on to the floor among the nuts and back go their slimy fingers to the nut shelling process. The finished article is thrown into a pile, packed in zinc-lined cases and labeled "Choice Shelled Walnuts."

Further Extracts from "The Experienced Farrier."

By Ronald Gwatkin, Ontario Veterinary College.

In the last number of the Canadian Veterinary Record there were set forth for the amusement of the reader certain passages from "The Experienced Farrier," which was published in the year 1678. In this article a few more crumbs of wisdom are offered from across the space of two hundred and forty-three years. The original spelling and use of capital letters is retained.

In explaining "The Office of the Farrier" the author describes the anatomy of the horse according to his conception of it, and then discusses the elements and humors as follows:—

"The Principal Members of a Horse.—Some hold that there be four, and make the stones or Gignitors one; but I say there are but three; the Liver, the Heart and the Brain, and if he be offended in any one of these he will die, but if any other member besides these be hurt, he may live; and therefore the Stones or Gignitors cannot be one of the Principal Members, for you cannot touch any of those three, but you may kill him outright, or desperately endanger him. Now the stones may receive hurt, and if I despair of curing them, I can cut them out, without peril of his life."

"Of the Elements.—The elements are four and they give life and nutriment unto man and all other living creatures. They are these, Fire, Air, Water and Earth. The nature of fire is to be hot and dry, air to be hot and moist, water to be cold and moist, and earth to be cold and dry."

"Of the four Humors, Blood, Phlegm, Choler and Melancholy. Four humors also there are, which be as it were four children to the four elements already spoken of; and these are, Blood, Phlegm, Choler and Melancholy, without which the body cannot be made; for blood naturally (if it be perfect), is hot and moist, but taketh most from heat, and therefore is subordinate to air; Phlegm is cold and moist, but the principality thereof is coldness, and therefore hath reference to water. Choler is hot and dry, but his chiefest nature is heat, and therefore is governed by the element of fire; Melancholy is cold and dry, but his chiefest condition is driness, and therefore subjects itself to the element of earth. Now, the fountain of blood is the Liver, which dispersing itself by the help of the veins into all parts of the body, nourisheth and preserveth the same. Phlegm preoccupateth the brain, being a cold and spungy substance, and the seat of the sensible soul. Choler inhabiteth the Liver, which being hot and dry, maketh a pleasing harmony with the blood. Melancholy resideth in the spleen, which is the receptacle and discharge of the excrements of the liver, from whence we may collect, that it hath its proper use and end: As for demonstration, Blood principally nourisheth the body, Phlegm occasioneth motion of the joints and members, Choler exciteth and provoketh the belly to avoid its excrements; and lastly Melancholy disposeth the body to an appetite. Whereupon all the learned Philosophers do with one unanimous assent agree in this, that in every natural body there are four principal instrumental members, from which all the parts of an organical body are said to be framed, and these are the Brain, the Heart, the Liver, and the Stones or Gignitors, and each one of these do perform its true function to all the particular members of the body; for the sinews do receive their sustentation from the Brain, and these are called animal spirits; the Arteries from the Heart, which are vital spirits; the veins from the Liver, which are natural parts; and the Seed-vessels from the Stones or Gignitors, as the place of generation."

Bishoping and other methods to make a horse seem younger were evidently in vogue in our author's time, as will be seen from the following:

"To make a Horse seem Young.—Take a small crooked iron, no bigger than a wheat corn; and having made it red hot, burn a little black hole in the tops of the two outmost teeth of each side the nether chap before, next to the Tushes where the mark is worn out, then with an awl-blade pick it, and make the shell fine and thin; then with a sharp scraping iron make all his teeth white and clean: this done, take a fine lancet; and above the hollows of the horses eyes which are shrunk down, make a little hole only through the skin, and put in the quill of a Raven or a Crow and blow the skin full of wind, till all the hollowness be filled up, then take out your quill, and lay your finger upon the hole a little while, and the wind will stay in, and he will look as youthful as if he were but six years old."

Among "Particular Receipts for the Scratches" this one is highly recommended "for them being held incurable." "First, let him blood in the Shackle-veins, the Spur-veins, and the fore-toe-veins, only letting it be three days between the bleeding of the one toe and the other, then with a thumb-rope of hay, rub the sores till they be raw and bleed, then take a quart of old urine, and a quart of strong brine, and put to them half a pound of allom and boyl it to a quart. With this hot wash the sores well, then take the sperm of frogs (in March), and put into an earthen pot, and in a week's time it will look like Oyl, then take the Oyl and the round things you see in the sperm, and spread it on a cloth and bind it to the sores, and do this divers times."

At the end of the book is a table alphabetically set down, and in the author's words, "shewing where the diseases of a horse do grow, either inwardly or outwardly, in any part of his body, and how you may know them, and what were the causes that bred them." Two examples taken at random will show the reader what this alphabetical list is composed of.

"Bots and Wormes in general are of three sorts, viz.: Bots, Trunchions and Maw-Wormes: Bots are usually found in the great gut near the Fundament, Trunchions are found in the Maw, and if they continue there too long, they will eat their passage through, which will certainly bring death, if not killed. The third sort are called plain wormes, which remain in a horses body, which are of an evil effect also. Bots are a small worm with great heads and small tail, breeding in the great gut, adjoining to the Fundament, which may be taken away by your hand, by picking them away from the gut where they stick. Trunchions are short and thick, and have black and hard heads, and must be removed by medicine. Maw-Wormes are of a reddish colour, somewhat long and slender, much like unto earthwormes, about the length of a man's finger, which also must be taken away by medicine. They proceed all from one cause, which is raw, gross and phlegmatic matter engendered from foul feeding, which causeth all these three sorts of evil creatures to breed. The signes to know when he is troubled with them is, He will stamp with his feet, kick at his belly, turn his head towards his tail, forsake his meat; he will groan, tumble and wallow, and also frisk his tail to and fro."

"Madness or frenzy is divided into four passions. The first is when some bad humors or blood getting into the panicle of the brain, but in one part only, it quickly makes him dull of spirit and sight; which you will know by this sign, he will turn round like one that is giddey; the reason is, because the outward part of the head is grieved only. The second is, when the venom of such bad blood doth infect the middle of the brain, then he becometh frantick, leaping against walls or anything else that standeth in his way. The third is, when corrupt and bad blood filleth the veins of the stomach, and infecteth as much the heart as brain, then he is said to be mad. The fourth and last is, when the blood infecteth not only the brain and heart, but even the panicles also, and then he is said to be stark mad, which you may know by biting at every man that comes near him, and by gnawing the manger and walls about him, and at last he will be so very mad that he will tear his own skin in pieces."

BIRTHS.

The Record extends congratulations to Dr. O. J. and Mrs. Read on the tidings of the birth of a son, on the 17th March, 1921, also to Dr. F. H. and Mrs. Bescoby, of Los Angeles, California, on the birth of a son.

MARRIAGES.

On December 22nd, 1920, by Rev. W. A. Cameron, Toronto, Ruby Beatrice Helmer, daughter of Mr. and Mrs. Wm. Helmer, of Finch, Ont., to Captain John McLeod Stuart, M.C., R.A.V.C.

On February 15th, 1921, by Rev. E. B. Lanceley, Toronto, Mabel E. Jewison, daughter of Mrs. Susan Jewison, 27 Bloomfield Avenue, Toronto, to Dr. Robert Mercer Mason, son of Mr. and Mrs. Stewart Mason, Mono Mills, Ont.

OBITUARY.

We regret to announce the death from pneumonia of Dr. Oscar Harold Foreman, at his late residence, 86 Hallam Street, Toronto, on Monday, March 7th, 1921, at the age of 28 years.

Dr. Foreman graduated from the Ontario Veterinary College in 1918. Immediately after his graduation he obtained his commission in the Veterinary Corps, proceeding to France same year. On his return he commenced to practise at Leduc, Alta. Later he came to Toronto, and was assistant to Dr. J. A. Campbell until the time of his death.

A man of sterling qualities and high ideals, Dr. Foreman's death is a loss to the profession. Our deepest sympathy is extended to his bereaved family.

OLD TIME HORSESHOE MAY SOON DISAPPEAR.

London.—Elaborate experiments are going on here to find a type of foot gear for horses which if successful will make the horseshoe as it has been known for 1,400 years as extinct as the dodo. The present hard, flat pavements, designed principally to sustain motor traffic, present a surface on which ordinary horseshoes either slip or cause objectionable indentations, and so the authorities are joining the humane societies in trying to devise a new form. None of those so far tried out bears the slightest resemblance to the old symbol of good luck.

Joint-Ill in Foals

By H. N. Thompson, Virden, Man.

This is a disease which is the cause of enormous annual losses and disappointment to horse breeders the world over.

The greatest variety of therapeutic treatments have been tried, but with very indifferent success in the control of the infection, and it can be definitely stated that no curative treatment has proven a panacea for this disease.

The principal reason for this failure of curatives, being, that we have to deal with a highly virulent infection in a host presenting a very low natural resistance to disease.

For do we not observe, that each added day of the young animals life materially increases its resistance; that the longer the interval between the birth of the foal and the outbreak of the malady the more favorable are its chances of recovery? While in those cases in which disease develops during the first few days of life, a fatal termination can be expected as foregone conclusion.

The trend of both medical and veterinary science of the present day is toward the prevention of disease rather than cure. Still, in this disease we find that effective prophylaxis presents many features peculiar to this disease alone.

It being a generally recognized fact that the disease is of bacterial origin, then, the obvious prophylactic agent would be of biologic origin as well. But unfortunately, in the great majority of cases, the infection develops so early, and runs so rapid a course, that no vaccine or serum, no matter how specific, would have sufficient time to produce an active or even a passive immunity. The question therefore arises as to the possibility of producing the necessary immunity in the foal before birth as we have seen that an immunity to be of any general value in the control of this disease, must be in active operation at the time of birth.

In this problem we find that no other infection, either of the human or of the lower animals, presents a parallel case and we are forced to leave the beaten paths and originate new methods of control.

There are, at the present time, widely divergent views held, both as to the actual identity of the causative micro-organism, the course of the infection, the avenue by which it gains entrance to the system, and also as to the feasibility of the different methods of producing an effective immunity.

It has been stated that joint-ill is not a single disease, but rather a group of diseases or infections and caused by a number of entirely different bacteria. No doubt joint-ill does present itself in a number of different forms, but even in the most widely differing types there can be noticed a remarkable similarity in the symptoms presented. We have other well known diseases exhibiting just as widely divergent types, such as hemorrhagic septicaemia, or tuberculosis and these are certainly due to a single causative agent, the difference in the types being more a question of the part affected rather than a difference in the identity of the causative organism.

It would appear much more reasonable to assume that joint-ill is a single disease, the causative micro-organism being of a streptococcic or staphylococcic origin. There have been, we will admit, a variety of types of bacteria isolated from the typical lesions, more especially from those in the advanced stages of the disease, but the greater number of these bacterial types are present, not as actual disease producing agents, but rather as accidental visitors present only by reason of the lowered resistance of the patient and the thus more favorable entrance to, and multiplication in, the animal system. While there might be a question as to the identity of the actual causative agent, we can have no reason to doubt but that the virulent, highly pathogenic and usually fatal infection, is one of septic and pyogenic origin.

Various strains of streptococci and staphylococci are invariably found in joint-ill lesions, and the symptoms are almost always such as could be caused by these bacteria alone, taking into consideration the low natural resistance of the host and the very probable tissue susceptibility as well,

According to Rosenow, certain strains of streptococci will cause arthritis, while the typical abcess formation, anaemia and general prostration might easily be caused by the staphylococci alone.

"We find that staphylococci produce certain soluble toxins such as leucocidin and staphylolysin which are partly responsible for the tissue destruction and symptoms which accompany these infections." (Kolmer.)

"Severe staphylococcic infection is probably due, in part, to the paralysing effect and actual destructive action of the leucocidin on the leucocytes, preventing for the time being, the walling off of the lesion and effectual phagocytosis." (Kolmer.)

"Why an infection of this type should prove so highly virulent and so often fatal can only be explained by the low resistance of the host, and there may be a positive tissue susceptibility as well. Bacteria normally non-pathogenic, may, under conditions which lower the natural disease resisting powers of the host, become highly pathogenic." (Kolmer.)

The fact that the most efficient curative agent has proven to be the staphlylococcic and streptococcic serum should, alone, prove this contention.

The principal reason this serum has not proven so successful as in similar infections in the adult, being, not that the serum was not specific for the infection, but rather, on account of the fact, that we have to deal, in joint-ill, with a highly virulent infection of an exceptionally rapid course and a very low natural resistance to disease, exhibited by the subject.

The vital question in the consideration of this disease and a point upon which there is a considerable divergence of opinion even among our acknowledged leaders in veterinary science, is as to when and how this infection is contracted.

It is plain that the infection is contracted very early in postnatal life, if not before. We know that, in a great number of cases symptoms of the disease appear within a few hours of birth, though the typical symptoms, such as lameness, arthritis and the closely following abcess formation may not appear until the sixth to tenth day and may be much later.

It has been demonstrated that foals born under the best possible hygenic conditions have developed the disease and that the most strict antisepsis in regard to the navel of the newly born foal does not eliminate the possibility of infection. In fact, and I am sure that I speak for the great majority of the rural practitioners, the only reasonable conclusion that can be arrived at, is, that this infection is often, if not invariably, acquired during prenatal life.

Do we not notice that a mare producing one joint-ill foal frequently loses the next foal from the same cause? Have we not all noticed mares which regularly lose the foal from this cause and ones which the owner has even stopped breeding from for no other cause than this? Mares of this type may be found in close cohabitation with mares which are regularly bred and as regularly produce healthy foals. It must surely be more than a coincidence to find this condition so widely recognized. If the infection be acquired through the navel of the newly born foal, why should disaster so surely overtake the progeny of certain mares as almost as surely ignore the progeny of other mares? Even the opinion of an Irish friend of mine that there must be a curse on his mare, does not entirely satisfy us. Again, if the navel be taken as the avenue of infection, how can we explain the presence of disease found on post mortum examination of a foal within four hours of its birth? It certainly seems most unreasonable to expect that any infection, no matter how virulent could run so rapid a course. While in those numerous cases where the foal is born, weak, limp, unable to stand or suckle, we have every reason to believe that this condition has been brought about by the action of an infection acquired and in active operation during pre-natal life.

If we are to assume that the fetus acquires this infection in utero, it will first be necessary to find out if disease can be acquired in this manner.

We find a marked scarcity of literature dealing with this phase of the question. It has been demonstrated, however, that the placental wall does not invariably act as a barrier to preventing an infection from being transmitted from the dam to fetus. A study of this subject by Newlow would indicate that while non-pathogenic bacteria seldom pass by this route, pathogenic bacteria may, however, pass through quite readily.

For instance, pregnant women suffering from smallpox may give birth to infants showing active lesions of prenatal infection and syphilis of the fetus is a well known condition. Baumgarten, as well, is of the opinion that many children are subject to prenatal infection. (Kolmer.)

We see here that some pathogenic bacteria may pass through the placental wall and the early appearance of joint-ill in the foal, notwithstanding the most stringent asepsis and hygenic conditions during parturition, has led us to believe that there must be more than a probability that the infection is often, if not always, acquired in this manner. And until it has been proven otherwise, it would seem a reasonable conclusion, that if one pathogenic organism be able to pass through the placental wall and thus cause an infection in the fetus, this infection can also be transmitted in the same manner.

If an infection can be so transmitted it would seem a reasonable assumption that the antibodies necessary for the production of immunity could be transmitted in a similar manner.

"Chauveau, in 1888, noticed that an immunity could be transmitted from dam to fetus in utero by the fact that lambs from anthrax-immune ewes exhibited a higher immunity to the disease than lambs from normal ewes." Also Ehrlich, in his extensive experiments with the vegetable poisons, abrin and ricin, proved that an immunity could be transmitted from mother to offspring, but depends on the passive immunity transferred by the blood and later by lactation.

He concludes, as well, that the immunity noticed by Chauveau was an immunity acquired by the transfer of the essential antibodies from the dam to the fetus in utero. Similar experiments by Thomas and Kitasato with symptomatic anthrax are interpreted in the same sense, suggesting that here also a transcept of antibodies had taken place. The experiments of Ehrlich permit of no doubt as to the validity of his conclusions. (Zinsser.)

"We know, for instance, in such diseases as diphtheria, where the immunity depends on the presence of the antibodies in the blood, there may be a passive immunity, lasting for weeks and months after birth, conferred from mother to offspring, and it is important to remember this in the selection of guinea pigs for the purpose of antitoxin standardization as Anderson has pointed out." (Zinsser.)

It would appear then that we have authoritative proof that an infection can be transmitted from dam to fetus, also, that an immunity, depending on the passive transference of the essential antibodies, can be transferred as well.

Joint-ill is a disease in which curative measures have proven lamentably inefficient. Prophylactic treatment to be applied directly to the foal would be of little value on account of the very short incubation period, if we assume the infection to be postnatal and out of the question entirely, if, as we have every reason to believe, the infection be prenatal in the great majority of cases.

The obvious procedure, then, in this case, would be to apply the prophylactic agent to the infoal mare and in this way, by the transcept of the essential antibodies, produce the required immunity in the unborn foal.

There has been considerable work done along these lines both with vaccine and serum. To my mind the rational procedure would be in the use of a vaccine.

Vaccine produces an active immunity, serum a passive immunity. An active immunity means the production of the essential antibodies in the animal system, the production of the antibodies and the presence of the immunity remaining, in a great many cases, long after the antigen has disappeared from the scene.

A passive immunity is much more transient in its period of usefulness and as we have no production of antibodies it would seem a reasonable assumption that there would be a smaller chance of sufficient antibodies being transmitted to the fetus in utero to produce the desired immunity.

In the choice of that which should prove the most efficient prophylactic agent we should be guided by our experience with curative measures, and as we have found the most efficient curative agent to be of streptococcic and staphylococcic origin then the obvious course to follow would be to use a vaccine or serum of this type.

We are fully aware of the wide variation in the length of time, in different infections, between the entrance into the animal system of the causative micro-organism and the development of the symptoms of disease, and it would appear quite safe to assume that there would be just as great a variation in the length of time necessary to produce an effective immunity by the use of the specific vaccines or serums for these different infections.

We would then choose a vaccine of a polyvalent type prepared from various strains of streptococci and staphylococci, using strains isolated from joint-ill lesions, if at all possible."

In using this vaccine on the infoal mare, the treatment should start at a date previous to foaling that would insure a sufficient interval to produce the required immunity, and it would be safer to err on a longer rather than on too short an interval. To my mind the treatment should begin at least six weeks previous to foaling, thus giving sufficient time for eight or ten injections of the vaccine.

This is the method I have followed during the past seven years in my efforts to control this disease, and on using this system on a great number of cases, the majority of which were mares which had lost the previous foal from joint-ill. I have had such favorable results that I cannot help but believe that this system, or a similar system of prophylaxis, will eventually control this disease.

A Mr. Peggie, M.R.C.V.S., of Bigger, Lanarkshire, appears to have arrived at the same conclusion as the result of his work along these same lines.

There can be no doubt but that the present systems can, and will be, improved upon. Different and possibly more efficient, combinations of the polyvalent serums and vaccines will be evolved. The proper interval before foaling, in which the greatest efficiency of the vaccine can be generated, will be worked out, but there would seem little reason to doubt, when this new and altogether original system of combatting disease has been developed to its fullest efficiency, that joint-ill will cease to be the menace to horse breeders that it is to-day. And in any case we would certainly not be justified in condemning as useless the vaccine system of prophylaxis until the whole gamut of biological therapy has been exhausted.

SALE OF BLOOD STOCK IN ENGLAND.

There is still a demand for blood stock in England. At Tattersall's December Sales at Newmarket (according to the Cavalry Journal), a brood mare, Salamandria by St. Frusquin-Electra, and covered by The Tetrach, fetched 16,000 guineas, a record price for a brood mare.

From the following figures it can be realized the value of blood stock:

Monday	133	sold,	aggregate	price	27,852	guineas
Tuesday	154	“	“	“	83.185	“
Wednesday	158	“	“	“	102,465	“
Thursday	160	“	“	“	123,605	“
Friday	95	“	“	“	21,438	“
Total	690				358,545	“

It will be of interest to note that the following mares were bought for the National Stud:

Coronation by Isinglass-Sceptre by Persimmon, 3,800 guineas, and Welsh Rarebit Llangibby-Crown Gem (sister to Sceptre), 2,600 guineas. Mary Mona by Chaucer-Marienworth by Isinglass-St. Marguerite, 2,000 guineas.

CAPACITY OF ELEPHANT FOR LIQUOR IS QUESTIONED.

Chicago.—The question of how much liquor can legally be prescribed for an elephant, camel or a dog, is in the hands of the federal grand jury to-day. The grand jurors are investigating the case of Dr. Bert Franklin, owner of a veterinary hospital, arrested for issuing too many liquor prescriptions. Franklin's defence, according to District Attorney Clyne, is that the prescriptions were issued for animals treated in his hospital, but the Government alleges that owners of the animals drank the medicine.

'FLU AMONG THE HORSES.

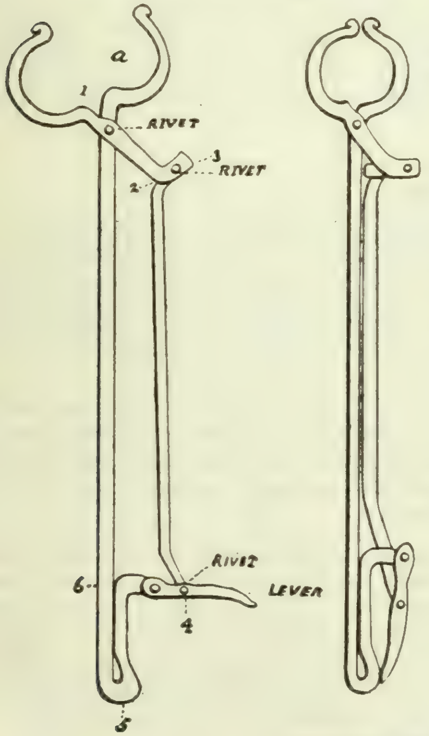
Heavy Losses Through Epidemic at Bruce Mines—London Also Suffers.

Havoc is being worked among the horses of the Bruce Mines district by epidemic influenza, according to T. B. Whiteside, a guest at the Carls-Rite. Between Bruce Mines and Echo Bay no fewer than 131 good animals during February succumbed to the epidemic, which in every way resembles the disease causing so heavy loss in human life two or three years ago. Visitors from London state that Middlesex also is in the grip of a similar affliction, causing the death of many good horses. As yet no one has ventured to cite the epidemic as reason for the extension to the veterinarians of the privilege of writing prescriptions.

ANOTHER FIELD FOR THE VETERINARIAN.—(Continued).

By J. A. Allen, Animal Pathologist, Fox Research Station, Health of Animals Branch, P.E.I.

In the March issue of the Canadian Veterinary Record, the writer gave an historical review and a general description of the comparatively new live-stock industry of Silver Black Fox Farming. It was promised in this article to furnish the profession with an outline of the more important diseases attacking the domesticated fox; but for the sake of completeness it is thought advisable to preface this subject with a short description of such matters as restraint, problems of sanitation, and fox surgery.



C.Benoit

FOX TONGS.

(a) Diameter of neck piece equals 3 in.
(b) Distance from point 1 to 2 eqquals 3 in.
(c) " " " 2 to 3 " 1⅜ in.
(d) " " " 3 to 4 " 15½ in.
(e) " " " 1 to 5 " 21½ in.
(f) " " " 5 to 6 " 5½ in.
(g) Lever measures 5½ inches.

The tongs are made of ⅜-in. round iron, except the rod from 3 to 4, which is ¼-inch material.

Restraint.

The semi-domesticated fox has not entirely lost his wild traits, nor has he forgotten that nature has provided him with a set of incisor teeth that admirably serve the dual purpose of breaking up food, and defence. The bull dog's proverbial tenacity has not, I suppose, been over-rated, but if he is capable of doing greater injury and causing greater pain than the fox, he deserves his reputation. Although never bitten by a bull dog, the writer has reason to believe that the fox is just as thorough in this respect, and it would take a lot of argument to convince him that this statement is not correct.

It may be stated without qualification that once a fox has passed the puppy stage, it is not advisable to place the hand in or near the mouth. When fox pups are raised on foster cat mothers they are usually much more docile and can be fondled just like the household tabby; but even then they may experience a sudden psychological change, especially if put with their wilder companions, and are not always to be trusted.

The tongs shown in the accompanying cut are almost indispensable on fox ranches. A full description is given of this ingenious device because it should be a handy implement in restraining other small animals, especially ferocious or rabid dogs.

These tongs can be purchased in any of the hardware stores in Prince Edward Island for $3.50. Any Blacksmith should have no difficulty in making a set from the description appended.

The tongs are snapped on the animal's neck after he has been forced to a corner of the pen or fox kennel. Some operators prefer to catch the animal by the tail and then the tongs are applied afterwards. This is perhaps the better method since the fox will snap at the tongs and may injure his teeth on the hard jaws of the tong. When a fox is held head down by the tail he is comparatively helpless, though some of them have wonderful muscular power in the back and at times can come dangerously near one's hands by curling upwards.

After the tongs are in place, they are brought in line with the spinal column and the hind legs and the handles are held in one hand. In giving medicine, the other hand is passed quickly to the head and the ears are grasped. The animal is then held up while an assistant administers the medicine. If a round stick is presented near the fox's mouth he will snap and hold on thereto. The stick can then be used as a fulcrum and the medicine poured in. When tablets or capsules are given, they are dropped into the back of the mouth and then forced into the pharynx with a smooth stick or other convenient implement. When working around a fox's head the mouth should always be taped.

Sanitation.

Sanitation, or rather the lack of adoption of sanitary methods, cause a grave condition even in present day fox farming. Too little attention is given to general cleanliness. This is largely due to the tradition that foxes must not be disturbed from mating time until the pups are at least three or four weeks old, which very often means that the young are brought forth in a dirty environment.

In nature the fox is accustomed to roam over a wide territory, and there is not nearly the same chance of his coming in contact with the secretions or excretions of his fellows as when penned up from year to year in a small enclosure. Under these conditions the ground becomes fouled and is a nidus for parasitic and other infections.

The problem of sanitation has naturally a direct bearing on the diseases of foxes in confinement; for example many of the young are heavily infested with round worms. Ascarids have been found in foxes only a few days old, and the intestinal canal of pups only four weeks old is sometimes completely packed from stomach to colon with these parasites. Such heavy infestation can be usually taken as an index of the sanitation of the premises on which the foxes were raised; for when we come to trace the source of infection, we often find unsanitary houses.

Because of the tradition that foxes must not be molested for several months of the year, it is difficult to get the average fox caretaker to realize the extent of the problem. The tendency is to attempt to raise foxes under conditions as close as possible to those found in the natural environment; but when an animal is taken from the wild and placed under domesticated conditions it is advisable to deviate from natural conditions.

For example, instead of allowing foxes to honeycomb these small enclosures with burrows, some form of impervious flooring that would lend itself to ready disinfection should be provided. The kennels should be duplicated so that while the animals were occupying one house, the other could be thoroughly cleansed and disinfected.

The problem of sanitation is one of the most vexatious questions of fox-farming and unless a solution is found the industry will always be exposed to unnecessary dangers.

Fox Surgery.

So far we have observed very few conditions in which surgery is indicated. In the earlier days, adjoining fox pens were built too close, so that the occupants of one pen could thrust a leg through the fence. Foxes will bite at any object presented to them so that many foxes were severely injured in this way. It is a peculiar psychological trait, but two foxes may live harmoniously in one pen, and just as soon as they are separated by a wire partition they may become unfriendly and will snap and bite at each other.

In nearly every case after such accidents, the limb has to be amputated. In the hey-day of the fox boom when foxes were sold for $20,000, this was considered a very important operation, and it was not unusual for a surgeon to be brought in a special train to the scene of the accident. In those days practitioners of human surgery were often employed, and it is recorded that a prominent surgeon removed the appendix of a millionaire in the morning and amputated the limb of a fox in the afternoon. The same fee was obtained for both operations.

Needless to say, such operations caused grave concern to the owners, and hourly bulletins were issued reporting the condition of the injured fox. The operation, too, was an elaborate affair, in which very fine technique had to be displayed. The animal was anaesthesized with chloroform, the surgical area carefully prepared, the skin flapped and stitched and the stump carefully bound in aseptic dressing. But even in the hands of expert physicians, a large percentage of these patients died. The reasons for the mortality were that foxes will gnaw off a bandage and dirt will become encrusted between the wound and the bandage thus preventing proper drainage, and they have great intolerance to chloroform.

During these last few years, the writer has performed successfully a number of amputations in which no anaesthetic was employed, and not even a bandage was applied. The area was simply washed with a disinfectant solution, the bone snipped off with bone forceps, the dead flesh trimmed and the patient turned loose.

This the second of a series of articles on Black Foxes by Dr. J. A. Allen. A third will appear in a subsequent issue.—Editor.

OPENING OF NEW VETERINARY HOSPITAL AT BARRIE, ONTARIO.

A fully modern veterinary hospital has been established by Dr. J. Dunn at Barrie, Ontario. The formal opening took place on March 17th. There was a large attendance of citizens and farmers from the surrounding country, and the following visitors were also present: Dr. D. R. Caley, Bracebridge; Dr. J. A. Campbell, Toronto; Dr. C. D. McGilvray, Toronto, and Mr. W. Bell, of Messrs. Ingram & Bell, Ltd., Toronto. Dr. Dunn provided a luncheon at which Mayor Little, of Barrie, gave an address of welcome. Dr. McGilvray responded to Mayor Little's address, and in his remarks commended Dr. Dunn for his enterprise in establishing an up-to-date and fully modern veterinary hospital. He felt sure that the enterprise of Dr. Dunn would be fully appreciated by the community at large. A very successful clinic was also held. Drs. D. R. Caley and J. A. Campbell acted as surgeons in charge of the clinic, and performed several very successful operations. Dr. Dunn's hospital is situated on one of the principal streets of the town, has a waiting room for clients, a consulting room and dispensary, operating room, fully equipped with simplicity operating table and stocks, and separate stabling for about 20 patients.

EDITORIAL

All correspondence, articles and items for publication to be addressed
Canadian Veterinary Record, 110 University Ave., Toronto, Ont.

Veterinary Education and Research

The following announcement appeared in the Free Press, Aberdeen, Scotland. "Governments will do what large and homogenous masses of the people demand. If for once the landowners, the owning and tenant farmers, the laborers of the land, and all the vast interest concerned with live stock development would combine to demand that veterinary research, as well as education, were splendidly subsidised, they would be put on a worthy footing. It would pay the nation as no other expenditure could. The treatment of veterinary education by our Governments is and has been niggardly and ignorant in the extreme. It is a disgrace to us before the world. We must take off our hats to the Veterinary profession, for they have done much and learned much with little encouragement. They have not really been helped to be efficient; yet it is surprising how efficient the service has become. The veterinary surgeon is a hard-worked, clever, but poor man; yet the status of his profession will never be raised to its proper dignity, and remuneration until the Government really recognize the importance—nay, the need of—adequately subsidizing high veterinary research."

The foregoing remarks are significant in that they clearly express the need for further support and facilities being extended towards veterinary education and research. In some respects governments are peculiarly unconcerned as to the necessity for maintaining a high standard of veterinary service as being in the best interest of live stock development by safeguarding the health of animals. When one considers the enviable reputation which Canada enjoys with regard to the health of its live stock it would seem reasonable to expect that every effort would be made to encourage a high standard of veterinary service in all its branches. Probably the health of Canadian live stock has been safeguarded too well by the veterinary profession and a sense of false security established. One has only to consider that Canada for the past 30 years has remained entirely free from the so-called animal plagues such as foot and mouth disease and contagious pleuro-pneumonia in cattle. Likewise glanders has been suppressed, hog cholera largely suppressed and only occurring as sporadic outbreaks, sheep scab and cattle mange reduced to a negligible extent, dourine of horses completely eradicated. Surely achievements such as these should be a sufficient testimony as to the value and worth of the service rendered by the veterinary profession in safeguarding the health of Canadian live stock. If any of the so-called animal plagues had gained a foothold in Canada one can readily appreciate the consequent losses which would have accrued to the live stock industry and the large expenditure of public funds entailed to suppress such diseases. In safeguarding the health of live stock "eternal vigilance is the price of safety." It therefore behoves those entrusted with live stock development to extend a large measure of support and encouragement towards the maintenance of efficient veterinary service. Towards this end further assistance should be granted for the purpose of developing a high standard of veterinary education and research. In the case of veterinary research there is an ever increasing field of usefulness by means of which the profession could render invaluable service to the live stock industry. The establishment of research laboratories with an adequate staff of trained laboratory workers is urgently required. Such problems as cattle tuberculosis and contagious abortion in cattle are deserving of serious consideration with a view to accomplishing their suppression and eliminating their resulting losses in as short a time as possible. The employment of public funds for the proper conduct of veterinary research work has always fully justified itself in the past and will undoubtedly be of greater value in the future. The Department of Agriculture through its live stock branches, both Provincial and Federal, should be fully seized of the fact that the entire export trade in live stock is based on the fundamental essential of freedom from disease, and likewise with the dressed meat trade and export bacon trade. These are only made possible as a result of the efficient work rendered by the veterinary inspection service. If these branches of veterinary usefulness should fail our export trade in live stock and meat and meat food products would be imperilled. It is hoped, therefore, that governmental bodies will extend the fullest measure of financial support towards the further enlargement of veterinary research in order that the various live stock problems engendered by disease may be properly and effectively dealt with.

V—V—M.

Remedies for the cure and prevention of contagious abortion in cattle, are, as yet not sufficiently conclusive to warrant the claim that they have proved successful.

Scientists admit that up to the present no specific cure is known. This statement is published by the Health of Animals Branch of Agriculture at Ottawa and the Bureau of Animal Industry, United States of America. Notwithstanding this we hear of stockmen, dairymen and farmers, and even veterinary surgeons, being solicited to purchase an alleged specific secret remedy for the cure of abortion known as V-V-M.

Its beneficial powers are advertised by means of flamboyant circulars containing statements of cures affected, together with inconclusive testimonials from farmers interposed with passages of poetry of a very mawkish character and comic paraphase withal. The wonders of V-V-M are extolled as possessing not only the power of expelling the organism from the system of affected animals, but also of preventing abortion "due to some accident, such as slipping and falling"; it "makes the calves of treated mothers strong and healthy; it gives them a good start in life"; and what is most appealing "SAVES YOU VETERINARY BILLS."

V-V-M is a secret remedy, which so far as we can learn, has never been analyzed, and indeed the proprietor claims that the preparation, V-V-M is neither biological nor pharmaceutical, and that it cannot be analyzed. Again the literature states that V-V-M is an antitoxin.

The Canadian Veterinary Record ventures to express the opinion that such advertisements should not commend any "secret remedy" to the profession and should not appeal to the intelligent stockbreeder or farmer.

The Record has received protests from a number of Veterinary Surgeons against such advertisements, and it is in response to their requests and in performance of our duty to protect the interest of stockbreeders that this matter is referred to.

We have just received a copy of a resolution passed by the Live Stock Association protesting against questionable proprietary medicines which are being placed upon the Canadian market to-day. This resolution, which has also been passed by the National Dairy Council, and is now in the hands of the Minister of Agriculture at Ottawa, reads as follows:—

"THAT WHEREAS the United States have effected legislation regulating the sale of 'cure-alls' and 'specifics' for the diseases of live stock and preventing the sale of such unless inspected and recommended by qualified officials, and whereas the existence of such legislation in the United States and not in Canada makes this country the stamping ground for dispensing rejected 'cures' and 'specifics' of which nothing is known. Be it therefore, resolved that the Minister of Agriculture for Canada, be asked to secure legislation at the coming session of Parliament to regulate the sale of such 'cure-alls' and to provide that all 'specifics' and remedies especially for the more serious disease of live stock must first be submitted for examination or test, to properly qualified or responsible officials and not allowed to be offered for sale unless recommended by such officials."

As contagious abortion of cattle is a disease of vast economic importance and so widespread in its character, it is hoped that secret proprietary medicines being prepared and sold in Canada for cure of that disease will receive special attention from the Department of Agriculture and to be reported upon accordingly. Those who are inclined to experiment with such preparations, would be well advised before doing so, to consider statistics published by investigators who have made contagious abortion a special study.

It is now well known from systematic observation that untreated cows do not continue to abort definitely.

According to statistics published by the bulletins of the Bureau of Animal Industry, 50 per cent. of untreated cows abort but once, relatively few twice, and a very small percentage lose calves a third time.

The ambition of the scientist is to produce or develop an effective immunizing agent which will induce this immunity without loss of the fetus. To date considerable work has been done with specific sera, bacterins and bacillary suspensions, and while results of these investigations have not so far been entirely successful, the treatment by biological preparations are justifiably correct in relation to the rational treatment of other diseases and should not be discouraged.

The objections of V-V-M are that it is a secret proprietary medicine, unsupported by any published research that has been heard of, that it claims to cure abortion; to prevent its appearance in a treated herd and to act as a tonic; that it defies analysis, being neither biological nor pharmaceutical, and yet it is an antitoxin. The advertised testimonials are by no means convincing, and it is questionable whether "veterinary bills are saved" by users of V-V-M. We would advise our readers not to experiment with V-V-M until it has been proved by experiment or analysis, or is accepted by the profession, as a safe remedy for contagious abortion.

ANAESTHETICS.

We are quite safe in stating that, until recently, anaesthetics were scarcely used in veterinary practice. Great achievements in surgery now demonstrate that it is necessary that the patient shall be in a state of repose, with muscle tissue relaxed, before attempting to commence an operation.

The modern surgeon finds it necessary to devote his attention to the region that is under consideration, and not be disturbed, by having to witness the disconcerting spectacle of the animal's needless struggles or muscular reflex during the progress of the operation.

Strange, as it may seem, there are still a few who are opposed to the use of chloroform as an anaesthetic for the larger animals. Upon what grounds this prejudice exists is difficult to determine, but it may be assumed that they are mostly from practitioners who never use an anaesthetic.

The general public, are daily becoming more and more enlightened in the benefits of anaesthesia, and in many cases do not wait for the veterinary surgeon to suggest its application, but ask for its employment when a painful operation is advised.

Operations performed at the expense of a good set of "tying harness," while the owner and sundry friends stand by watching the struggles of the patient, are to say the least, repulsive, and sometimes reflect upon the ability of the surgeon.

By virtue of The Animals' Anaesthetics Bill, recently passed in England, certain operations according to their severity, are forbidden by law, unless performed in conjunction with an anaesthetic. Unfortunately, through indifference of the veterinary surgeons, a number of operations performed by unqualified practitioners, were exempted. The "quacks" vigorously opposed this Bill, with the result that castration and dehorning are exempt. As it stands at present the travelling gelder will continue to function for a considerable time yet.

If such a law could be enacted in Canada, it would ultimately tend to suppress "quackery" more effectively than any other measures, for the simple reason that very few unqualified practitioners use an anaesthetic, or attempt general anaesthesia. It therefore seems expedient that in the best interests of the profession and education, we should endeavor to educate all stock owners to realize the safety and advantages of anaesthetics, so that in time they will demand it for all future operations of a painful nature.

We must give the owners of animals a little credit for being able to determine for themselves some of the harmful and lasting results following castration of adult animals and "ridgling" horses where no anaesthetic is used. In these cases the repair to the system is slow and tedious, many of the patients never recover the same "pep" and tone they exhibited prior to being operated upon. This is not altogether due to the loss of the sexual organs, so much as the reflex following the shock to the central nervous system through the operation being performed without anaesthesia.

We contend that the greater use of anaesthetics in major surgical operations is well worth earnest consideration.

CLINICAL and CASE REPORTS

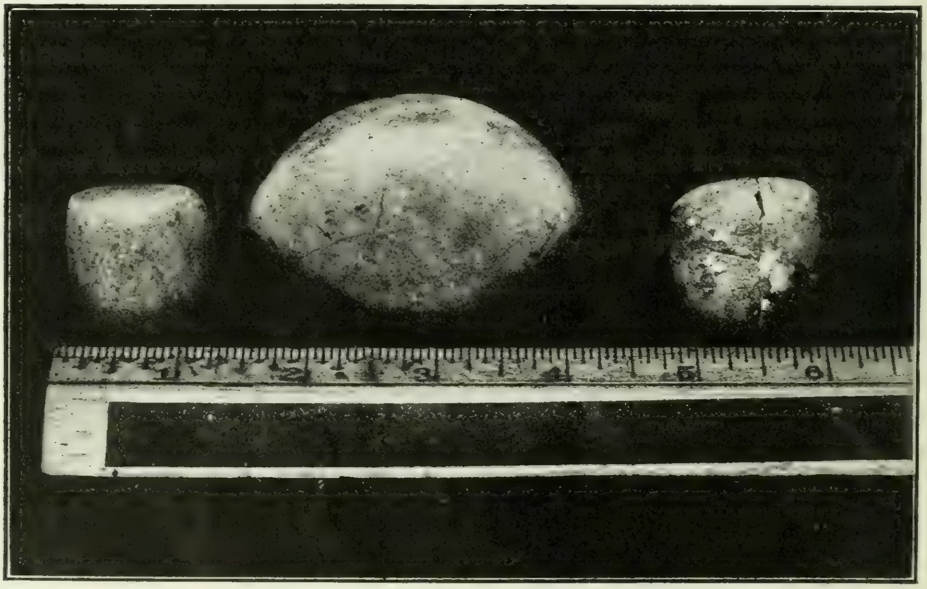
CAESARIAN SECTION.

How Premature May pups be and still survive.

Caesarian section was performed on a Boston terrier that showed marked symptoms of dystokia on the fifty-fourth day of the gestation period. At this time the operation was carried out, and on examination of the pups evidence of immaturity was manifested by scarcity of hair on the face and extremities. Three hours after the operation with a little assistance the pups began to nurse, and the next day it was found that they could grasp the teat without assistance; and from that time on they developed normally and without showing any ill effects from their premature delivery.—J. A. Campbell, B.V.Sc., Toronto.

LARGE CALCULUS IN A DOG.

At the canine clinic of the Ontario Veterinary College on January 12th an Irish terrier dog five and a half years old, Champion Coast Native Prince, of International show fame, was operated upon, and a collection of three calculi weighing six and a half ounces was removed. Their presence did not seem to inconvenience the Prince very much, no doubt due to the fact that they were smooth. The operation was without sequelae and the dog was soon ready for his duties in the show ring and for stud purposes.—J. A. Campbell, B.V.Sc., Toronto.



The three calculi removed from Champion Coast Native Prince.

TETANUS.

Bay gelding weighing 1,400 pounds, about seven years old, was admitted to hospital January 17th, 1921, with acute tetanus. The available history was to the effect that seven days prior to tetanus developing the animal was being treated for a picked-up-nail wound in off fore foot. When examined the wound had completely healed and not re-opened as he was too stiff to permit raising the foot. All the cardinal signs of acute tetanus present. Tail erect and trismus. Treatment of this case consisted of the immediate injection of 40,000 units of antitetanic serum administered intraspinal at the lumbosacral articulation. The only other treatment was hypodermics of lobelin sulphate, grains one-quarter, three times a day, for the first two days as a sedative. Gradual improvement after four days. On the fifth day eating soft mashes. On the 8th February he was returned to work.—W. J. R. Fowler, B.V.Sc., Toronto.

ANOTHER CASE OF TETANUS.

Black gelding, weighing 1,600 pounds, about seven years old, admitted to hospital Sept. 27th, 1920, no history; most aggravated case of tetanus. Severe nervous symptoms. When taken out of the ambulance it was seen at once that we had to deal with a very acute case. Trismus was present. Muscular contractions had stiffened him out, rigid-tonic-spasm, cold perspiration. Painful breathing through rigidity of diaphragm. Lips drawn tightly back over incisors. Nostrils dilated. Eyes sunken due to retraction of muscles of eyeball. Longissimus-dorsi muscle contracted depressing the spine. Commenced treatment with 75,000 units of antitetanic serum, injected intra-spinal with a large needle through the lumbo-sacral articulation as in the preceding case. Lobelin sulphate one-half grain, three times a day for the first few days. The second day he received another dose of serum consisting of 30,000 units. Seven days following he commenced to eat and made an uneventful recovery. Back at work October 29th.—W. J. R. Fowler, B.V.Sc., Toronto.

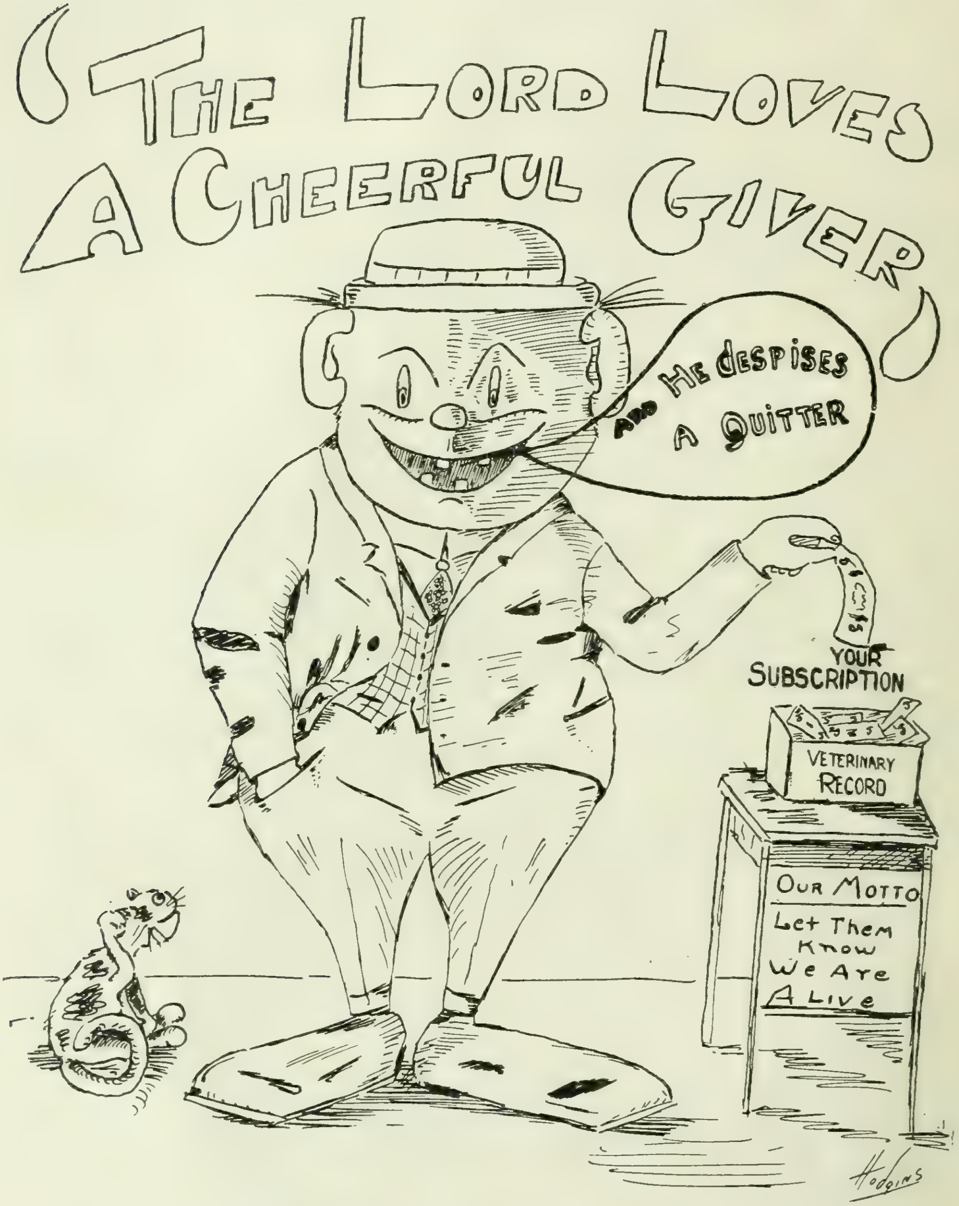
DYSTOCIA.

Brown Percheron mare, 11 years of age, bred to foal on May 20th, 1921. On February 2nd, she attracted the attention of the attendant by an apparent loss of appetite. Her general appearance exhibited all the signs of advanced gestation. A few days later the udder was observed to be swollen and milk present. The mare became somewhat uneasy, frequently whisking her tail and stamping her hind feet. In view of the date of parturition not being until May these symptoms were not taken into much account by the owner, and within a couple of weeks she seemed to recover her normal tone.

April the 25th my services were requested, and on visiting the mare found a case of dystocia with a posterior presentation croup and local deviation. The foal was removed dead. It was fairly well formed but apparently poorly nourished. After delivery of this foal it was discovered that there was a second presentation. This foal was removed without very much difficulty, in a state of decomposition. Both foals were separate, identified with individual membranes.

Post operative treatment consisted in sterile irrigations. Recovery of the mother was uneventful.—W. J. R. Fowler, B.V.Sc., Toronto.

TO OUR READERS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PERSONALS

After 20 years of efficient public service C. S. Tamlin, V.S., inspector of dairies and milk, tendered his resignation to the London Board of Health at a meeting of that organization Tuesday, March 29th. He was urged to reconsider the step, but remained firm in his decision. At the request of the board he consented, however, to carry on the duties of the office for one or two months at least. Dr. Tamlin gave as his reasons pressure of business. He claimed that things had reached a state where he would be forced to either give up his private practice and devote his whole time to the city's business or else give up his work as inspector. He felt that there should be a man on the work who could give his full time to inspecting. He said that it was with great reluctance that he tendered his resignation.

J. H. Saunders, acting chairman of the board in the absence of Dr. Cunningham, expressed the deepest regret at the step which Dr. Tamlin was taking. He also at the same time expressed much indignation with the way some one outside of the board was interfering with its work. "The city will have to pay a man twice the amount they are paying Dr. Tamlin to do less than he is doing. If outside individuals would keep out of the business of the board things would run much more smoothly," said Mr. Saunders. "If they want to do the talking they should attend the meetings and do some of the work." Dr. Downham asked Dr. Tamlin to reconsider his decision, but the inspector would agree only to stay until other arrangements had been made. Mr. Saunders believed that if Dr. Tamlin agreed to stay two months he should be paid at the rate suggested in the estimate prepared by the board.

Dr. H. B. Collet, who joined the Staff of the College last fall, has been awarded the gold medal by the Royal Veterinary College, London, England, for the best professional examination in class "D." We extend our heartiest congratulations to Dr. Collet. He sailed for England on May 6th to take up practise in England. While in Toronto he was Lecturer in Hygiene at the Ontario Veterinary College.

The Dominion Lay Meat Inspectors Association held their annual banquet at the Carls Rite Hotel, Toronto, on Thursday, May 12th. Among those present was Dr. Torrance, Veterinary Director General; Dr. R. Barnes, Chief of Meat Inspection Division; Dr. D. A. Irvine, Chief of Toronto Meat Inspection Service; Dr. Lowrey, Chief Travelling Inspector; Dr. C. W. McIntosh, Dominion Meat Inspection Service, and others.

The marriage of Dr. Mason to Miss Jewison, which is announced in this number of the Record, is the consummation of a very interesting romance. Until her marriage Mrs. Mason was a staff nurse in the Davis Hospital, Toronto, and is very popular with all who know her. Dr. Mason is with the Meat Inspection Division, Health of Animals Branch, Toronto.

Dr. E. A. Watson, Chief Animal Pathologist, Biological Laboratory, Ottawa, has recently returned from a trip to Prince Edward Island, where he conferred with Dr. J. A. Allen, Pathologist of the Black Fox Research Station, and studied the present epidemic of an influenza-like nature among the foxes on the island.

The Toronto Branch of Dominion Meat Inspection Service have secured four excellent large size photographs of Drs. Torrance, Tolmie, Barnes and Rutherford. These photographs occupy prominent positions in the office on Keele Street, Toronto.

Dr. C. W. McIntosh, who occupied the chair in Meat and Canned Foods Inspection during the 1920-21 session, at the O. V.C., has now resumed his official capacity with the Dominion Meat Inspection Service at Toronto.

Dr. H. S. Clapp, of the Meat Inspection Division, has been transferred to the Canadian Packing Co., at Peterborough, Ont.

Dr. William Lawson has been moved from Hamilton, Ont., to Toronto, Ont.

Dr. G. C. Brownridge has been transferred from Whyte Packing Co., Stratford, Ontario, to Toronto, Ontario.

Dr. H. H. Bishop is now living in Toronto, having been transferred from the Ingersoll Packing Co.

Lieut.-Col. J. W. Fisher, C.A.V.C., expects to attend the annual military training Camp at Peterborough during June.

Dr. C. S. Cain is now living in Toronto, having been transferred from Brantford, Ontario.

Dr. J. E. Morse, of the Health of Animals Branch, has been moved from Peterborough to Montreal, P.Q.

Dr. E. G. Folsom is now associated with Dr. S. Brenton at the Detroit Veterinary Sanitarium. In spite of a very busy practice he still finds time to enjoy three square meals a day.

Dr. Joseph Hawkins, of Detroit, is one of the nine veterinarians who graduated from the O. V. C. fifty years ago. He says that he knows of only one other man of his class who is still alive.

Dr. A. H. Hunter is now the Havre (France) representative for an English frozen meat importing firm. In case of difficulties with the veterinary inspection he is sent to various other parts of Europe.

Dr. J. S. Glover, of The Farmers' Dairy Company, Toronto, recently took a two weeks' course at Michigan Agricultural College. On his way home he stayed two days in Detroit, the guest of Dr. E. G. Folsom.

Dr. C. F. Ottewell, of the Public Health Department, City Hall, Toronto, is the son and grandson of veterinarians, and all three graduated from the O. V. C.

Dr. Ralph Jenkins, in charge of Milk Control, City Hall, Toronto, is the proud father of a daughter, born on March 14th.

Dr. Hubert Shull, O. V. C., class '16, has been appointed President of the Arkansas State Examining Board.

Dr. A. B. Wickware is now assisting Dr. Allen in connection with the foxes on Prince Edward Island.

Lieut.-Col. T. J. de M. Taschereau, R.C.A.V.C., Commanding Canadian Army Veterinary Services, is established at Militia Headquarters, Ottawa.

Dr. Joseph Reid, of the Biological Laboratory Staff, Ottawa, recently paid a visit to his native town, Chateauguay, Quebec.

Dr. F. H. S. Lowrey, Chief Travelling Inspector, Health of Animals Branch, Federal Department of Agriculture, was in Toronto for a few days last month.

Major F. Daigneault is now transferred from the Federal Meat Inspection Service, to the Field Division of the Health Animals Branch of Agriculture at Montreal.

Dr. W. R. Wood is now at the office of the Veterinary Director-General at Ottawa.

Dr. C. H. Richardson is engaged in field work at Niagara Falls, Ont., having ben transferred from the Meat Inspection Service.

Dr. E. B. Ungar has been transferred from the Meat Inspection Service to field work in the Montreal District.

Dr. A. W. Beach is now engaged in field work in the Health of Animals Branch, Department of Agriculture.

Dr. A. Brown has been transferred to Sarnia, Ontario, as Inspector in Federal Field Work.

Dr. A. Robertson resigned from the Department of Agriculture, and has entered into practice at Beachburg, Ontario.

Dr. P. E. Simard is now living in Montreal, having been transferred from the Meat Inspection Service to field work in the Federal Department.

Dr. W. T. Galbraith resigned from the Department of Agriculture, and is now located in Cowansville, P.Q.

THE HORSE STILL THRIVES.

Motor power has largely invaded the province of the horse, but the animal still lives and thrives and still has its widespread usefulness. The great war had its devastating influence on the horse and also developed the value of machinery in its place. But experience has proven that there are still many uses to which the horse can be better applied than motor or steam power. When trains came in the horse was to disappear. When the trolley was adapted to public service, a crippling blow was dealt the horse. When the bicycle became a furore the horse became an object for scorn. When the automobile and, later, the tractor appeared, the horse was to vanish, but he maintained his ground. His numbers are not decreasing to any notable extent while his quality has ever an upward trend. Breeding stations are being established and every effort is being made to maintain breed type. Saskatchewan's success in winning championships at the recent International Stock Show in Chicago is an evidence of the marked success that has been met with in Canada. But the West is not alone in the march of horse improvement and development. There is probably no breed that is more hardy or agriculturally useful than the French-Canadian horse. The French-Canadian Horse Breeders' Association has long been in affiliation for record purposes with the National Live Stock Record Board at Ottawa, and in the last two years that association has turned over to the Dominion Department of Agriculture for twenty years a farm of five hundred acres at St. Joachim, Que., to be mainly used for the breeding of its particular type of horse. There are at present 67 French-Canadian horses on the farm, all registered. Entries were made at some of the more prominent fall fairs in Quebec, and in each instance first prizes and championships were won. The December number of the Agricultural Gazette of Canada gives full details of the work that is being done at the recently-acquired French-Canadian horse breeding farm.

ASSOCIATION NEWS

ONTARIO VETERINARY ASSOCIATION.

The forty-second annual meeting will be held on August 11th and 12th. Arrangements are being made for an excellent programme of addresses, clinics, and demonstrations in which Dr. J. F. DeVine, of New York, has consented to take part.

The first day of the meeting will be spent at the Ontario Veterinary College, while the second day will in all probability be spent at a farm in th vicinity of Toronto.

It is hoped that as many as possible of the members of the Association will be present to help make the meeting a success. Programmes will be sent out as soon as all the necessary arrangements are complete.

J. S. GLOVER, Secretary-Treasurer.

SASKATCHEWAN VETERINARY ASSOCIATION.

The annual meeting of the Veterinary Association of Saskatchewan will be held at Regina, July 26, 27, 28, 1921. It is expected that Dr. L. A. Merillat, Chicago, will be present, and will have charge of the clinic. The annual meetings of this Association have been held at the University of Saskatchewan for a number of years, where the facilities for conducting the surgical clinic are excellent, but it is felt that the attendance of members from the southern part of the Province will be increased if the meetings are divided between Regina and Saskatoon, respectively. There are a number of good openings in this Province for veterinarians, and the Secretary will be pleased to supply information to interested parties on application.

R. G. CHASMAR, Secretary-Treasurer.

BRITISH COLUMBIA VETERINARY ASSOCIATION.

A joint meeting of the British Columbia, Washington, Oregon and Idaho Associations has been arranged to take place in Seattle, Washington, at the Hotel Butler, on July 14th and 15th, 1921.

Last summer this association held a very successful meeting in Bellingham, Washington, with the Washington Veterinary Association. There were about 28 veterinarians present, representing an equal number from Washington and British Columbia. It was at this meeting that the idea of joining the Washington Association was suggested. Both the Oregon and Idaho Associations are expecting to be present, so one can easily see that we are bound to have one of the best and most interesting Veterinary Meetings ever held on the Western Continent.

It is hoped that many veterinarians will avail themselves of this opportunity, and arrange to make this a vacation trip which promises to be both pleasant and interesting. The British Columbia Association should be well represented.

A notice has been posted to all members inviting them to become subscribers to the Canadian Veterinary Record. It was pointed out that those who do not take that journal are missing a great deal, as it contains so much of that which is of vital interest to Veterinarians.

KENNETH CHESTER,
Secretary-Treasurer.

PRINCE EDWARD ISLAND VETERINARY ASSOCIATION.

The following are some particulars of the first annual meeting of the Prince Edward Island Veterinary Medical Association held in Charlottetown, on the 17th February.

Dr. Allen being called upon to give some particulars of his interview with the Prohibition Commission stated that they (Dr. Allen and Dr. Croken) were courteously received and assured that the Veterinarians would receive consideration at the next session of the Legisalture, as they had not the power to grant permission for the writing of prescriptions for alcoholic liquors to the Veterinarians.

The following were on motion, appointed a committee to draw up and present a petition to the government for the privilege:—Dr. I. E. Croken and Dr. J. A. Allen, for Queen's Co.; Dr. D. L. McAssey and Dr. Anderson, for King's Co.; Drs. W. G. Church and J. T. Cosgrove for Prince County.

On motion of Dr. K. W. MacKinnon seconded by Dr. O'Keefe, Drs. Allen, Church and Croken, were appointed a committee to draw up by-laws.

On motion of Dr. J. A. O'Keefe, seconded by Dr. Allen, a vote of thanks was tendered to the Secretary-Treasurer and other retiring officers. This was replied to by Drs. Pethick and MacKinnon.

A number of papers and addresses were then rendered as follows:—

1. The venerable John T. Cosgrove talked along general lines and received hearty applause for his witty comparisons and jokes.

2. Dr. J. A. Allen then gave a talk on some fundamentals of Bacteriology which was much appreciated by eevry member present.

3. Dr. C. J. Bousfield read an intensely interesting paper on stable disinfection and milk hygiene, and this was so interesting and instructive that the motion to have it published was unanimously carried.

4. Dr. W. G. Church, read a paper on the necessity of correct diagnosis of disease by veterinary practitioners bringing out the fact that a correct diagnosis is the disease half cured.

5. Talk by Dr. Croken on his experiences in India with the different eastern contagious diseases including glanders, foot and mouth disease and rinderpest.

6. Talk by Dr. Pethick on Pictou cattle disease, an explanation of his experiment in determining whether the disease, (which produces Scirrhosis of the Liver) was of bacterial origin or due to the rag wort plant proving that it is due to the latter, also a description of the symptoms and post mortem appearances.

A lunch was served in the Rose and Grey rooms which was appreciated beyond description and was enjoyed to such an extent that the members continued with the order of business and did not find it necessary to have anything further to eat during the whole evening. As a matter of fact, this was not expected when the arrangements for the lunch were made, but it provd to be sufficient for all.

Paris.—More than half a million horses disappear every year, according to Georges Lefebvre, prominent French humaritarian, who says that in ten years the only horses left in Western Europe will be those preserved in zoological gardens as curiosities.

"A lesson should be learned by the extraordinary rapid numerical decline of the American buffalo," asserts Lefebvre in a manifesto to French horse-lovers.

"Fifty years ago millions of buffalo roamed the western plains. To-day their number in the entire world is to be counted in scarce hundreds.

'The same thing is happening before our eyes with the horse. The buffalo was killed off because of its meat value and because of its ferocity.

"The horse is dying off in Europe also because of its meat value and because of its comparative uselessness beside the automobile.

"During the war when fresh meat was difficult to obtain the people of Europe—of France and England as well as Germany—made the acquaintance of horsemeat and found that it was not so bad as it had been painted.

"Providing the horse was a healthy animal and providing its blood had been drained off immediately following slaughter the meat of a horse is nourishing and can be taken even by invalids without harmful effects.

"Following this need and this discovery hundreds of horse butcheries were established throughout Paris.

"There are in Paris now more than 500 meat markets exclusively devoted to the sale of horseflesh.

"Beef, veal, mutton and pork are so high that horse meat constitutes the largest item in the domestic bill of the poorer Paris housewife.

"The danger in all this is that horses are not, like cattle, sheep and pigs, being raised for slaughter.

"When a horse is killed it is either because he is old, sick or because his owner has no further use for him and can make more money."

FEDERAL INSPECTORS' CONFERENCE.

During Easter week a conference was held at the office of the Veterinary Director-General, Ottawa, of the Inspectors in charge of Provinces. There were present the following:—Drs. W. H. McKenzie, Vancouver, B.C.; J. C. Hargrave, Medicine Hat, Alberta; J. B. Still, Winnipeg, Man.; L. J. Deniers, Montreal, P.Q.; George Hilton, Ottawa, Ont. The Meat Inspection Service was represented by Chief Inspector Robert Barnes, Ottawa, Ont.; Drs. Kellum and Lowrey. Dr. Frederick Torrance, The Veterinary Director-General, Department of Agriculture, Ottawa, addressed the meetings.

The object of the Conference was to discuss the work of the Health of Animals Branch, so that a general understanding could be reached and uniform action taken in each Province. The conference wound up in a banquet at the Chateau Laurier at which the Minister and Deputy Minister of Agriculture were present.

The animal called the cattalo is a cross breed between the buffalo and the ordinary cow. The product is an animal between the two in weight, able to "hustle" for itself on the plains. It promises to be a good beef animal.

COLLEGE NOTES

Closing Exercises at the Ontario Veterinary College.

The closing exercises of the Ontario Veterinary College were held in the Assembly Hall of the College on Thursday, April 28th. Proceedings commenced at 8 p.m. under the chairmanship of Principal McGilvray who presented the prizes to the following successful students. First prize for general proficiency was awarded to L. M. Heath of Toronto; second prize to T. G. Sprague of Medicine Hat, Alberta; and third prize to F. C. Schmidt of Corvallis, Oregon. The graduating class was addressed by Dr. F. Torrance, Veterinary Director General, Ottawa, who impressed upon them the necessity of upholding high professional standards and striving always to render in good measure such service as the community might expect, in guarding the health of its animals for the encouragement of profitable live stock development; and to maintain open markets for Canadian live stock, which were known to be on probably the healthiest basis of any country in the world. He further pointed out the ever widening field of usefulness that lay before them, in the development of the live stock of the country, and in certain phases of Public Health work by protecting the public against unwholesome supplies of animal food products. While the profession have had many difficulties to contend with, and have not received the recognition they had a right to expect, the speaker hoped that such obstacles mitigating against the profession might be rapidly removed, and due recognition given. Dr. McGilvray's remarks to the graduating class were his usual happy blend of good advice and pointed stories. He voiced the regret of the faculty at parting after their years of work together and wished them God speed. Addresses were also given by members of the faculty, including Dr. W. J. R. Fowler, Dr. R. A. McIntosh, Dr. H. E. Batt, Dr. R. Gwatkin, Dr. C. W. McIntosh, and Dr. H. D. Nelson. The class picture was presented to the College by E. E. st. G. Pallett, President of the class. Dr. Pallett spoke of the kindly relations which had always existed between the student body and the faculty and assured the latter that the graduating class would continue to merit their confidence. Among the visitors present were Dr. George Hilton, Chief Veterinary Inspector, Health of Animals Branch, Ottawa; Dr. Irvine, Inspector in charge of Meat Inspection Division for Toronto; and a goodly number of the Veterinary Inspectors of the Health of Animals Branch, as well as members of the profession from various parts of the Province.

The Ontario Good Roads Convention.

From March 1st to 3rd the Ontario Good Roads Convention held their annual meeting in the Ontario Veterinary College. Some cynical soul suggested that something of the kind was needed, as a goodly proportion of the members lost their way going into the assembly hall where their meetings were held. At all events it created a diversion for the jaded student when during the course of a lecture some good-road enthusiast would find that he had landed into a lecture on bacteriology or obstetrics and would retreat in a bewildered manner to find the proper room. The senior year, however, (with visions of driving their Fords over good roads to many cases a day in the near future), were very sympathetic, and the lost ones were rapidly transferred to their proper sphere of action.

THE BACTERIOLOGICAL BALL.

A gay bacillus to gain her glory,
Once gave a ball in a laboratory.
The fete took place on a cover-glass,
Where vulgar germs could not harass.
None but the cultured were invited.
For Microbe Chicks are well united.
They closely shut the ball-room doors
To all the germs containing spores.
The staphylococci first arrived,
To stand in groups they all contrived.
The diplococci came in view,
A trifle late and two by two.
The streptococci took great pains,
To seat themselves in graceful chains.
The pneumococci stern and haughty,
Declared the gonococci naughty.
And said they would not come at all
If the gonos were present at the ball.
The fete began, the mirth ran high,
With not a fear of danger nigh.
Each germ enjoyed himself that night,
Without a fear of a phagocyte.
'Twas getting late and some were loaded,
When bang! the formaldehyde exploded;
And drenched that happy dancing mass
That swarmed the fated cover-glass.
Not one survived, but perished all
At that bacteriologic ball.

—The Practical Druggist.

Visitors to France who bring their pet dogs with them will have to part with their pets as soon as they reach the French shores, under a Government campaign against the spread of rabies. The Government has ordered the Veterinary Medical Society of France to experiment and produce the requisite vaccine. This is being done, and it is expected that within a short time the order for the vaccination of all poodles and other canines in France will go forth. Foreign dogs reaching French ports will be kept in quarantine for ten days, during which time they will be subject to the vaccination treatment. France is the last of the principal European countries to attack the travelling liberty of the dog. England has had a quarantine provision for visiting canines for a long time, and similar restrictions are in force in Germany and Spain.

CIVIL SERVICE OF CANADA—EXAMINATION FOR POSITIONS OF VETERINARY INSPECTORS.

Examination for positions of Inspectors in the Health of Animals Branch was held in Toronto on April 28th and 29th, at the Ontario Veterinary College, 110 University Avenue, Toronto. About 30 veterinarians wrote on this examination, results of which are not yet forthcoming from the Civil Service.

Contagious Diseases—Time: 1½ Hours.

1. What conditions in a herd of cattle would lead you to suspect Infectious Abortion? What steps would you take to deal with it, if found?

2. Name the principle difference in the living habits on their hosts of the sarcoptes, and Psoroptes parasites. What disease do they produce; and on what particular species of our domestic animals are each of these parasites most commonly found?

3. Give the differential diagnostic symptoms in the following diseases: Strangles, Glanders, and Ulcerative Lymphangitis.

4. Name three serious contagious, or infectious diseases of cattle, which do not exist in Canada, and if introduced, would necessitate immediate stringent measures of control and the prompt prohibition of the importation of any further shipments from the country of origin. Give the reasons for the necessity of such action.

5. Explain the reasons for controlling the feeding of garbage to hogs.

Histology—Time: 1 Hour and 20 Minutes.

1. (a) Name the wandering or migratory cells giving (1) those of marrow origin; (2) those of lymphatic origin.

(b) Describe the nuclear changes in mitotic cell-division (Karyokinesis).

2. Compare the cellular make-up of the thymus gland during the period of prenatal existence with that of the young animal, and again with the organ during late life.

3. Describe briefly the spleen, particularly with reference to the circulation.

4. Where are the following to be found:

(a) Simple squamous epithelium;
(b) Simple columnar epithelium;
(c) Stratified squamous epithelium?

(Give one example of each.)

5. What is the structure of a Malpighian Corpuscle of the kidney?

Pathology—Time: 1 Hour and 20 Minutes.

1. What are the principal agencies through which bacteria give rise to infection and disease?

2. State briefly what is meant by (a) active immunity, and (b) passive immunity.

Give an example of each, artificially conferred, naming the immunizing agent and outlining the method of its preparation.

3. What is tuberculin? What are its properties and physiological actions? Describe the manner of its preparation.

4. Name a different disease for each animal species: horses, cattle, sheep, and swine, caused by a filterable virus.

5. (a) What class of bacteria cause gas gangrene? Name the most important of the gangrene bacteria.

(b) Describe the Anthrax bacillus: Morphology, staining reactions, cultural characteristics, and pathogenecity.

Anatomy—Time: 1 Hour and 20 Minutes.

1. Give the dental formula for both temporary and permanent teeth of (a) the horse, (b) the ox, (c) the sheep, and (d) the dog.

2. Describe the lymphatic system of the ox, giving the name and location of each of the principal lymphatic glands.

3. Name in proper order from within outwards the structures forming the floor of the abdomen.

4. Describe the median nerve, name its principal branches and the parts they supply.

5. Name the ductless glands and give their location.

Regulations—Time: 1 Hour.

1. What constitutes a "Tuberculosis Free Accredited Herd"? Name the maximum amount of compensation provided for registered pure-bred cattle by this Act.

2. Describe briefly the "Municipal Tuberculosis Order", enforced under the provisions of this Act.

3. What official action is taken with cattle reacting to a test, applied by veterinary practitioners with tuberculin supplied by the Health of Animals Branch?

4. (a) Under what conditions may foreign meats enter Canada?
   (b) Under what conditions may meats be shipped from Canada?

5. What is the "Inspection Legend", and what are the restrictions regarding its use?

Meat Inspection—Time: 1½ Hours.

1. Describe briefly the importance of the Lymphatic System in relation to Meat Inspection.

2. Differentiate between: Sapræmia.
Pyæmia.
Septicæmia.

3. Describe in detail a post mortem examination of a carcass of Beef.

4. Differentiate macroscopically between a typical lesion of Tuberculosis and Actinomycosis in the sub-maxillary lymph gland.

5. What would be your judgment on a carcass affected with the following:
(a) Icterus;
(b) Urticaria;
(c) Abnormal Sexual Smell

UNIVERSITY OF TORONTO, DEPARTMENT OF VETERINARY SCIENCE, ANNUAL EXAMINATIONS, 1921. FOURTH YEAR.

We publish herewith the examination papers of the Graduating Year of the Ontario Veterinary College. It is believed that they will prove of interest to members of the profession and will recall to many that feeling of suspense which exists around examination time. The subject of these questions will serve to assist those who are about to compete in Provincial examinations.

Surgery—Examiner: W. J. R. Fowler, B.V.Sc.

1. Describe the different methods of firing and state where indicated.
2. Name the unfavorable results that may follow castration and explain each.
3. What do you understand by the covered operation for castration? Where is it indicated?
4. Describe the collar or band operation for paralysis of the penis.
5. Describe briefly the different operations for the treatment of a spavin.
6. Give the treatment for an umbilical hernia in a three year old horse.
7. What is a Hydrocele? How would you operate on it?
8. Describe the operation of Median Neurotomy and state where it is indicated.
9. Describe the operation of Lithotomy.
10. Describe the treatment for a Cervical Sinus.

Sanitary Service Regulations—Examiner: C. D. McGilvray, V.S., M.D.V.

1. What diseases are scheduled under the Animal Contagious Diseases Act?
2. What the the regulations governing the importation of horses from the United States into Canada?
3. What are the regulations governing the importation of Swine from the United States into Canada?
4. What condition must be observed in the importation of cattle from Great Britain into Canada?
5. What are the regulations relating to Sheep Scab and what steps would a veterinary inspector take to eradicate this disease?
6. What measures are effective in Canada for the protection of live stock in transit from infected cars and stock yards?
7. What policies are effective in Canada with regard to Tuberculosis?

Bacteriology—Examiner: Ronald Gwatkin, B.V.Sc.

1. Define and give examples of:
    - (a) Autolysis.
    - (b) Mordant.
    - (c) Aggressin.
2. What are ptomains and leucomains.

3. Explain, and give examples of, the following terms:
   (a) Vaccine.
   (b) Serobacterin.
   (c) Autogenous bacterial vaccine.

4. Explain briefly the present belief as to the mechanism of the tuberculin reaction.

5. Describe the preparation of tuberculin.

6. Discuss the diagnosis of infectious abortion due to Bang's bacillus by laboratory methods.

7. Describe briefly the principles of:
   (a) Complement fixation test.
   (b) Agglutination test.

Special Therapeutics—Examiner: R. A. McIntosh, M.D.V.

1. (a) What are the essential elements of treatment in Acute Indigestion?

(b) Mention the agents indicated in treatment, giving reasons for their use, how administered and the dose?

2. (a) In what forms of digestive disturbances are stimulants primarily indicated?

(b) Name five such stimulants and give examples of disease in both the horse and the cow in which they are useful.

3. Give reasons for recommending the following in any given case of disease as a purgative, Ol. Ricini, Mag. Sulph., Aloes, Arecoline, giving an example of a condition in which they are useful as such.

4. Give treatment for Pharyngitis, stating reasons for the use of medicinal agents of any other elements of treatment recommended?

5. Explain why and when you may recommend cardiac stimulants in Pneumonia. Name three that may be used, giving the dose.

6. Outline the essential elements of treatment in Influenza.

7. Briefly outline treatment of Laminitis due to an overfeed of grain, stating reasons for each step in the treatment.

8. Write prescriptions for the following:
   (a) Anodyne liniment for mammitis.
   (b) An antiseptic dusting powder for wounds.
   (c) An anthelmintic powder for round worms.

Infectious and Contagious Diseases—Examiner: C. D. McGilvray, V.S., M.D.V.

1. Explain the following terms: specific disease, occult, allergic tests, epizootic, sporadic, infectious, contagious.

2. Describe the technique and the positive reaction of the so called triple or combination tuberculin tests.

3. What is meant by an accredited herd as regards tuberculosis?

4. Mention the essential differential features of blackleg, anthrax and hemorrhagic septicemia in cattle.

5. Name six diseases the specific causal agent of which is unknown.

6. Define the following diseases and name the causative organism of each: glanders, dourine, texas fever, blackleg, lip and leg ulceration of sheep.

7. What essentials would you advise in the handling of a herd affected with contagious abortion.

8. Describe the nature, cause, symptoms and methods of controlling hog cholera.

Sporadic Diseases of the Horse—Examiner: J. N. Pringle, M.R.C.V.S., B.V.Sc.

1. Give the symptoms and treatment of acute muscular rheumatism situated in the lumbar muscles.

2. Give the symptoms of, and the treatment recommended for, thrombosis of the internal iliac artery and differentiate from azoturia.

3. Give the causes and symptoms of chronic hydrocephalus.

4. Give the cause and symptoms of, and the treatment for, acute pericarditis.

5. Give the causes and symptoms of chronic nephritis.

6. Give the causes and symptoms of icterus.

7. Give the causes and treatment of acute cystitis.

8. Give the symptoms of spasmodic colic and differentiate between that disease and thrombo-embolic colic.

9. Give the post-mortem appearances of croupous pneumonia and differentiate between them and the lesions of catarrhal pneumonia when a sequel of bronchitis.

10. Give the symptoms of stifle lameness, differentiating between disease of the femero-patellar articulation and the true stifle.

Laboratory Pathology—Examiner: H. E. Batt, B.V.Sc.

1. What are the outstanding microscopic differences between lobular and lobar pneumonia?

2. Describe in detail the microscopic appearance of a typical tubercle of tuberculosis.

3. How would you proceed to demonstrate the presence of renal casts in the urine? What is their significance?

4. Mention the macroscopic differences between the lesions of tuberculosis and actinomycosis in lymph glands.

5. An animal is suspected of having died from strychnine poisoning. What lesions would you expect to find at post-mortem? What methods must be adopted to confirm the suspicion?

6. Name the benign and malignant connective tissue tumors.

7. Give a definition for cloudy swelling. What are the causes of cloudy swelling in the renal epithelium?

8. What is the cause of goiter in new born lambs? Describe the microscopic appearance of a goiterous thyroid from such an animal.

Milk Hygiene—Examiner: Ronald Gwatkin, B.V.Sc.

1. In a milk-borne epidemic what factors control the percentage of people affected?

2. (a) What is the significance of a high bacterial count?

(b) What difficulties are met with in attempting to isolate pathogenic bacteria from milk?

3. In the production of milk under sanitary conditions what precautions must the milker personally observe?

4. What do you understand by:

(a) Pasteurized milk.

(b) Certified milk.

5. Give the technique of the Babcock test for butterfat in milk.

6. How would you determine the acidity of a given sample of cream?

7. Basing your work on the legal standard for S.N.F. show what percentage of water has been added to a sample of milk with lactometer reading 26 and butterfat 2.8%. Show all figures.

8. Describe a test for the detection of:

(a) Formaldehyde.

(b) Bicarbonate of Soda.

Meat Inspection—Examiner: C. W. McIntosh, B.V.Sc.

1. Describe briefly the importance of ante mortem inspection.

2. Under what conditions may an animal be removed from the yards or pens of an establishment?

3. Describe the post mortem examination of a beef carcass as performed in an inspected establishment.

4. What do you understand by the following terms as used in the Regulations? (a) "carcasses", (b) "export", (c) "Canada Approved."

5. How may unmarked meats be shipped from one establishment to another establishment under inspection?

6. Explain the following terms: Localized tuberculosis. Generalized tuberculosis.

7. Describe the post mortem findings on a carcass affected with pseudoleukemia, and state wherein this disease differs from true leukemia.

8. Define the following terms: Pyaemia, Septicaemia. What is your judgment on a carcass affected with either, and why?

9. Post mortem examination reveals: (a) Three cysticercus bovis in the muscles of mastication. (b) Two cysticercus cellulosae in the heart muscle. State the class of animals infested in each instance, also your judgment.

10. Differentiate between: (a) Poorness and emaciation. (b) Fatty degeneration and fatty infiltration.

Dr. Howard, Medical Offiicer of Health for the city of London, England, reports the destruction during the past month of 13,224 Japanese shaving brushes suspected of containing germs of anthrax.

LIVER FLUKE.

Cardiff.—Nearly 20,000 sheep have been killed recently in the Vale of Clwyd by a disease known as "fluke," according to a report to the Welsh Agricultural Council. Experts say the point of attack is in a certain class of snail, and that better drainage of the land is the best precaution against the disease.

REVIEWS

ACUTE GANGRENOUS INFECTIONS OF ANIMALS.

Etiology of Acute Gangrenous Infections of Animals: A discussion of Blackleg, Braxy, Malignant Edema and Whale Septicemia. Hilda Hempl Heller. From the George Williams Hooper Foundation for Medical Research, University of California, Medical School, San Francisco.

(Journal of Infectious Diseases, 1920, Vol. 27.)

No attempt can be made in the space available here to do more than outline briefly the contents of this very careful work, with the recommendation to those interested in the study of anaerobes to obtain a copy. In this paper the author confines herself to a discussion of the anaerobes infecting domestic animals. The anaerobic invaders generally speaking may be classified into the following groups in order of incidence in animal infections. Vibrion septique group, pathogenic for many animals; blackleg group, which is pathogenic for a lesser number; and the oedematiens and Welch group, whose occurrence in animals is relatively rare. A definition is given of the blackleg and vibrion septique groups. According to the author the number of bacteriologists working with mixed cultures, in the belief that they are pure, is very large, and not to be wondered at considering the confusing statements, in the literature regarding their differentiation. Details of the differentiation of the groups are given, based on their action in the animal body, cultural and morphologic character, and immune reactions. There is a critical analysis of the anaerobic infections of animals as recorded in the literature, and two appendices containing a catalogue of material investigated and a summary classification of the strains listed. Following are some of the author's general conclusions:—

"Cattle are subject to spontaneous infection by organisms of the blackleg group, and, somewhat less frequently, by organisms of the vibrion septique group, both of which types of infection are usually diagnosed as 'blackleg.'

"Sheep are subject to spontaneous infection by organisms of the vibrion septique group, and somewhat less frequently by organisms of the blackleg group. Both types of infection are probably diagnosed at times as braxy, as blackleg, and as malignant edema. It is possible that other diseases that are not of anaerobic origin are at times diagnosed as 'bradsot' or 'braxy.'

"Horses are subject to infection by members of the vibrion septique group. Such infection may or may not follow a wound. It was formerly frequently diagnosed as blackleg. Horses are also subject to infection by organisms of the edematiens group. True blackleg group infection in the horse has probably never been demonstrated.

"Hogs are subject to infection by members of the vibrion septique group. Such infection was formerly generally diagnosed as blackleg, but has more recently been diagnosed as malignant edema, etc. Hogs have probably never been shown to suffer from spontaneous blackleg infections.

"The comparative rarity of oedematiens—group infections in animals, except perhaps in the horse, and the great variety of serious invasion of animal tissue by B. Welchu are to be noted.

"All immunization work in connection with anaerobic diseases depends on a recognition of the group affinities of the anaerobic organisms infecting the animals of the particular district in which the immunization is proposed."

The author points out that the factors that are of most interest, namely, the epidemiologic factors, are almost wholly unexplained, and concludes with a plea for a world-wide study of these infections which cost agricultural countries vast sums every year, "and the proper investigation of which can be done only in a laboratory that is well equipped to handle anaerobes and that has the funds to employ a trained epidemiologist, who knows something of veterinary pathology and can spend all his time in the field." —R. G.

REPORT OF D. V. S., INDIA.

Indispensability of Horses.

Major-General Sir J. Moore, K.C.M.G., C.B., Director of Veterinary Services, India, in his report states that the equine population tables serve to show that the Allies had the command of the majority of the useful animals of the world, and this advantage went a long way towards the downfall of the enemy.

The disparagement of our own methods and the laudation of foreign systems with their general control of the equine population was so general in the Press for years before the war that it is quite refreshing (says The Field), to hear a British Officer for once forsaking reserve and making the statement that "probably no nation or army has had more experience of animals in the field than our own, and such experience gained in respect to the different classes of animals employed should constitute us authorities in ways and means of avoiding wastage.

The expansion in the number of horses during the war is wonderful reading. The pre-war strength was 23,000. During the first twelve days, 165,000 were impressed. The original Expeditionary Force had 53,000. Between August, 1914, and the middle of 1918, roughly 45,000 horses were brought in the United Kingdom. Oven 700,000 were purchased in the United States and Canada. At one period of the war the British Force possessed in France 475,000 animals. The total wastage from death, destruction, and missing was approximately 250,000 to the end of December, 1918.

During the four and one-half years, 750,000 animals took part in the war in France. To our habitual detractors the following paragraph may be commended.

"Very much less fortunate, and to our great regret, according to Ludendorff's Memoirs, was our principal enemy Germany. Her resources were exhausted; captured documents and orders revealed a burning desire to capture some of the beautiful horses of the English for her transport. She was not enriched by animals of ours falling into her hands, which is a glorious page in the history of our animals in the war, And the imposing sight of the grand German Army in retreat, with mixed teams of oxen and horses was a crown to her debacle."—Veterinary Record.

TUBERCULOSIS IN GOATS.

Tuberculosis in Milk Goats, by G. E. Golden, Veterinary Inspector, Bureau of Animal Industry, Sioux City, Iowa. Jour. A.V.M.A., April, 1921.

Tuberculosis of Goats, by Charles Murray, S. H. McNutt and Paul Purwin, Department of Veterinary Investigation, Iowa State College, Ames, Iowa. Jour. A.V.M.A., April, 1921.

Tuberculosis in Goats, by L. Panisset, Director, National Veterinary School, Alfort, France. North American Veterinarian, May, 1921.

Golden reports results of testing a herd of 42 Saanen and Toggenburg goats imported from Switzerland. Six reactors were detected, all of which on post-mortem examination, showed lesious of tuberculosis, which was confirmed by microscopic examination and animal inoculation.

Murray, McNutt and Purwin show in a review of the foreign literature that recognition of the disease in inspected abattoirs is not uncommon. The authors quote, among others, M. Schlegel in his report of the Director of the Veterinary Hygienic Institute of Freiberg for 1917, as follows:—"Tuberculous processes in goats assume a different aspect from those of other animals, tending to a high degree of caseation, calcification and encapsulation. Large areas of lung parenchyma are destroyed with formation of caseous, encapsulated nodules appearing in the form of soft cavernous abcesses enclosed by a thick fibrous wall. The capsule is a thick, smooth, fibrous wall and the contents often a yellowish green, cheesy material, the whole resembling the nodule of the cysticercus, the wall being readily separated from the surrounding tissue." A reactor autopsied by the authors showed "Tuberculous lesions in the lungs, the mediastinal and bronchial lymph glands, the liver and the spleen. The nodules in the lungs, liver and spleen were caseo-calcareous, those of the lymph glands calcified. The lungs showed the cavernous lesions, surrounded by a thick, fibrous, white wall similar to that described by the observers quoted above."

Panisset points out that the main reason for the popularity of goat's milk is due to a belief held by many medical men and the general public that the goat is practically proof against tuberculosis infection. During life tuberculosis in goats is manifested only by a loss of weight and a hoarse cough; later, respiration is accelerated and becomes difficult; the nostrils are soiled with a muco-purulent discharge. Mammary localization is recognized by induration of one or several quarters and there are very hard tumor-like enlargements which may be found under the skin. Diagnosis may be established by the same means that are employed in other species. The tuberculin test should always accompany a physical examination and should invariably be made before the goat's milk is to be used for food. Goat's milk has the same dangers as cow's milk, but is more to be feared because practically always used raw on account of the prevalent opinion that goats are immune to the disease. To conclude in his own words: "The danger of tuberculosis from consumption of goat milk may be exaggerated, nevertheless, veterinarians should disseminate the knowledge that goats are not immune to this disease."—R. G.

ANTHELMINTICS AGAINST HOOKWORMS IN THE BLACK FOX.

The Efficiency of Chloroform and Thymol against Hookworms in the Silver-black Fox, by J. A. Allen, Animal Pathologist, Fox Research Station, Health of Animals Branch, Canada. (From Journal of the A.V.M.A., April, 1921.)

Two conditions that have given fox breeders much concern are woolliness, which as the name implies, is a condition in which the fur loses its silky texture, feels much like wool, and does not develop long guard hairs; and rust, a condition in which the fur takes on a reddish or brownish hue, instead of the deep glossy blue-black color. The author finds that though all poorly furred foxes do not harbor hookworms, 68 per cent, of the woolly and stunted foxes used in his experiments had hookworms and concludes that Uncinaria undoubtedly influence the fur when the parasite is present in large numbers. From his experiments with chloroform and thymol as anthelmintics against hookworms the author sums up as follows:—

Chloroform is inefficient as an anthelmintic against hookworms in foxes. It is also a dangerous drug, producing a mortality of 50 per cent. in the present experiments.

Thymol showed a high degree of efficiency (87.8 per cent.) when given to foxes on the basis of 0.13 gram per kilo of body weight, with this dose repeated in two hours. From this dosage a mortality of 18.7 per cent. followed, which makes it rather dangerous for universal application unless a heroic attempt at eradication is necessary in ranches where infestation is heavy.

When thymol is used on the basis of 0.065 gram per kilo of live weight and the dose repeated in two hours, an efficiency of at least 33 per cent. may be expected, and the mortality is reduced to about 6.8 per cent.

One dose of 0.065 gram o fthymol per kilo of body weight has little or no anthelmintic effect.

Thymol is more effective and less dangerous than chloroform as an anthelmintic against hookworms in the silver-black fox.—R. G.

LAMENESS IN HORSES.

By Major R. S. Timmis, D.S.O., Royal Canadian Dragoons.

Published by Forster Groom & Co., Ltd., 15 Charing Cross, London, Eng.

Major Timmis' writings on horse mastership are well known to the majority of horse lovers both in England and Canada.

He writes about horses because he loves them, and his latest contribution to the broad subject of lameness demonstrates a wide knowledge of one of the most common and painful conditions met with in the history of a horse's life. Major Timmis becomes quite technical at times, a reflection upon his earlier training in Veterinary Science at the Ontario Veterinary College.

In this little book, consisting of about 126 pages, he treats of lameness in all its various manifestations. Surgical operations are briefly described, together with the kinds of drugs which may be useful in certain conditions all of which will appeal to the professional man rather than the layman.

Shoeing, in chapter 7, is discussed in a thorough and capable manner, briefly, but to the point, and will prove good reading for everyone working with horses.

The author has little use for veterinary surgeons who perform painful operations on the patient without the use of an anaesthetic. Anaesthesia is described in chapter 4. The administration of anaesthesia, whether local or general, are best left to the profession and Major Timmis' timely advice on the necessity of anaesthesia in all painful operations is not speculative but severely practical.

Whether this book is intended for the laity or the profession it matters not. In any event, it will suggest to the lover of horses that anaesthesia is advocated for humane reasons alone. In the latter case we know that cocaine, stovaine, eucaine are dangerous drugs and only sold to the profession, therefore the inference is plain.

"Lameness in horses" is published at two shillings net, of a convenient pocket size, and may be obtained either from the publishers in England or from the author in Toronto.—C. E.

Under a circular to veterinary surgeons in Canada, issued February 7th, 1921, we read that arrangements have been made with the United States authorities whereby after 1st May they will accept tuberculin test charts of cattle exported to the United States from Canada for breeding purposes and milk production, from certain practising veterinarians in Canada provided such charts are endorsed by a salaried Veterinary Inspector of this branch.

Canada in turn is agreeing to a similar arrangement with the United States in connection with cattle imported to Canada, and each country is preparing a list of practising veterinarians whose certificates will be endorsed by its salaried offiicers.

In order to be placed on the Canadian list, it is necessary for veterinary surgeons to pass an examination set by the Branch. It is pointed out that the examination is merely for the purpose above outlined, namely, in connection with the exportation of cattle, and is entirely separate and distinct from the Civil Service Commission examination for the appointment of Veterinary Inspectors to the permanent staff of this Branch. No salary is attached to a place on the approved list; all tests are to be made at the owner's expense.

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—The Veterinary Record, London, Eng.

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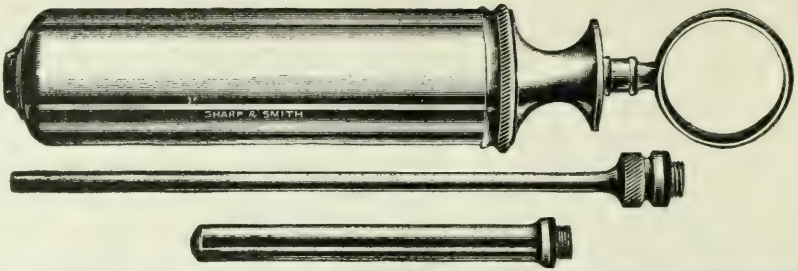

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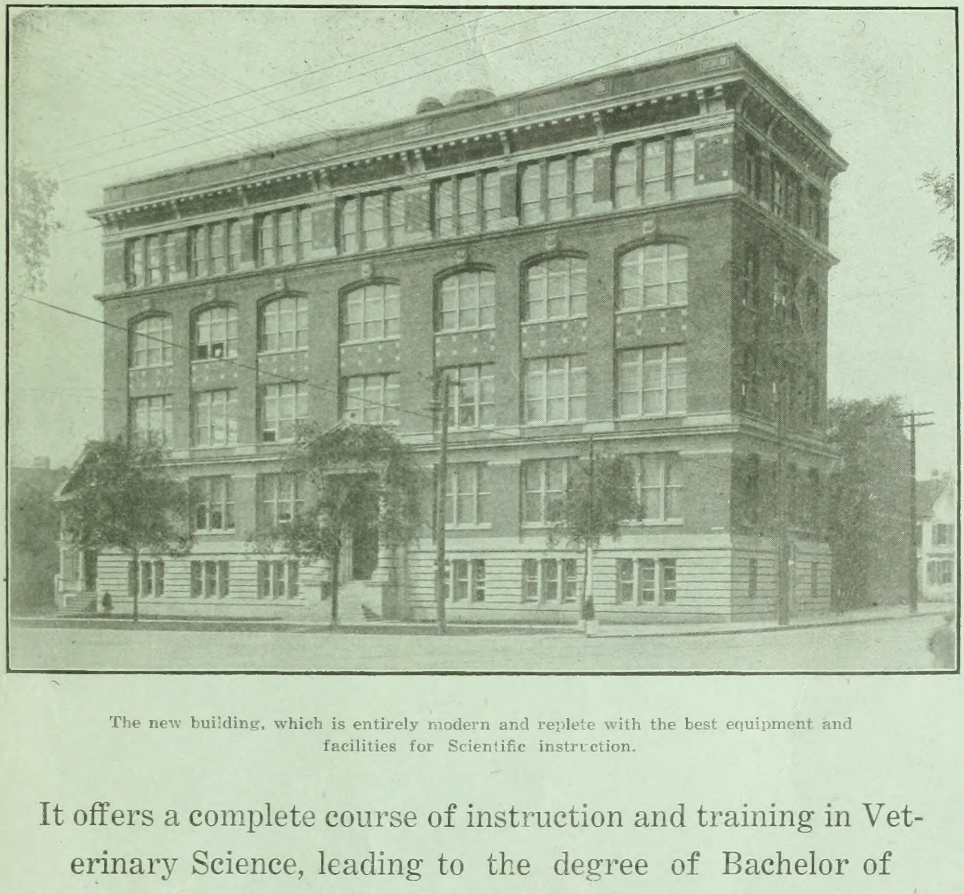

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